Bid/Quote Package

TOWN OF SURFSIDE BEACH

Administration

N O T I C E

The Town of Surfside Beach is soliciting Proposals for the provision of one, two, or three custom pumpers and one aerial platform apparatus' to include installment financing of fire apparatus and equipment. The Town of Surfside Beach will accept SEALED proposals until Thursday, October 8, 2009 at 10:00 a.m. at which time the proposals will be publicly opened and read. Proceedings shall be conducted at Town of Surfside Beach Town Hall, 115 U.S. Highway 17 North, Surfside Beach. A Bid Bond and Performance Bond will be required. The Town reserves the right to reject any proposal not properly marked. Proposals will not be accepted by e-mail or facsimile. If you have questions regarding proposal instructions please contact Jan Lewis at (843) 913-6111 or at Jlewis@surfsidebeach.org. Questions regarding proposal specifications shall be directed to Chief Robert Packard via e-mail at rpackard@surfsidebeach.org.

PLEASE ADDRESS MAILED PROPOSALS TO:

Town of Surfside Beach
115 U. S. Highway 17 North
Surfside Beach, South Carolina 29575
Attn: Jan Lewis, Administrative Manager

Also, please show the following PROPOSAL Number in the lower left hand corner of the envelope. Thank you.

BID NUMBER PSDF # P09-0004

Signature_____

Title_____

Proposal Number PSDF #P09-0004

INSTRUCTIONS TO BIDDERS

Proposers are requested to read the complete bid invitation carefully and submit their proposals in strict accordance with the requirements set forth.

Any questions regarding this specification must be submitted in writing via E-mail to Fire Chief Packard at rpackard@surfsidebeach.org a minimum of ten (10) business days prior to the bid opening date. Clarifications, corrections and/or changes shall be sent out in writing via E-mail to all prospective bidders.

The purchaser reserves the right to reject any or all bids or accept any bid presented which meet or exceed these specifications and which the purchaser may deem shall be in the best interest of the City regardless of the amount proposed.

The complete apparatus shall be manufactured within the continental United States. Vehicles manufactured outside of the continental USA shall not be considered. No exceptions will be permitted to this section of the document.

Any items that are standard on a manufacturer's apparatus that are not listed in these specifications shall be furnished.

SPECIFICATIONS FOR AERIAL PLATFORM APPARATUS

Proposal Number PSDF #P09-0004

PURCHASE INTENT

It is the intent of these specifications to describe an Aerial Platform Quint to be used in the Town of Surfside Beach, South Carolina.

It is the intent of these specifications to describe the furnishing and delivery of an Aerial Platform/Quint to the Town of Surfside Beach, SC. With a view to obtaining the best results and the most acceptable fire apparatus for service in the Surfside Beach Fire Department, these specifications cover only the general requirements as to the type of construction and test to which the vehicle must conform, together with certain details as to finish, equipment, and appliances with which the successful vendor must conform. Details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all non-specified features. The completed vehicle shall conform to the requirements of the National Fire Protection Association Pamphlet No. 1901, latest edition, for Motor Fire Apparatus, and shall exceed 1901 where specified herein for all applicable equipment noted.

When evaluating proposals, the importance of reduced life cycle costs and public safety associated with fire fighting apparatus shall be a major consideration and all evaluations shall exclude vehicles of a type that deviate from these specifications.

Apparatus with a design that utilize a commercial bus or truck chassis with the installation of a custom cab will not be accepted.

Proposals shall only be considered from manufacturers that have an established reputation in the field of fire apparatus construction and have been in continuous business for a minimum of thirty-five (35) years. A written chronological history of the bidder shall be included in the proposal response package.

Each bidder shall state the location of the factory where the chassis and body shall be built. They shall also state the location of the factory authorized dealer/service facility that is in a position to render prompt repair service and to furnish replacement parts for said completed apparatus.

The workmanship must be of the highest quality in its respective field. Special consideration shall be given to the following points:

1) Accessibility of the various components which require periodic maintenance or lube checks.
2) Ease of vehicle operation.
3) Visibility of the driver.
4) Features supplied that are beneficial to the intended operation of the completed apparatus.

Construction must be rugged and design must be certified to carry the loads as specified and to meet the road requirements and speed conditions as set forth under "Performance Test and Requirements".

Welding shall not be employed in the assembly of the completed vehicle in a manner that shall prevent the removal of a major component part for service and/or repair.

These specifications have not been established to preclude any vendors. However, the purchaser does not intend to make a decision solely based upon lowest price as determined by the US Supreme Court ruling

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"Paddock vs. Whitten" but intends to purchase an apparatus that meets the intentions, service, and needs of the Surfside Beach Fire Department.

The apparatus being purchased is expected to have a 25 to 30 year service life. Based on this requirement, the department is extremely concerned that the apparatus remains structurally sound and the outward appearance remains in a "like new" condition, with minimal maintenance and upkeep, throughout the service life of the apparatus. Aluminum apparatus bodies and differing construction designs will be reviewed and considered only if the builder / manufacture will meet the same "Body Structural Warranty" requirements specified in this bid document.

DEVIATIONS FROM PROPOSAL REQUESTS

It shall be mandatory for any prospective bidder that deviates from the proposed specifications to give a full description of all deviations.

Each clarification shall refer to the bid specification page number and paragraph. Any such clarification that appears vague or misleading shall be considered an exception. Complete clarifications are required describing the reason for the deviation. The completed vehicle shall be inspected upon delivery for compliance with specifications. Deviations shall not be tolerated and shall be cause for rejection of the cab and chassis unless they were originally listed in the bidder's proposal.

Where bidder's specifications and/or construction differ in any way from the bid specification, a full and complete description in specification shall be required. Drawings shall also be required to show alternative construction methods. Partial descriptions, or general clarifications covering groups of sections of the specification, shall be unacceptable and shall be cause for complete rejection of the bid.

Proposals taking total exception to the purchase specifications contained herein shall not be accepted and the bidder's proposal shall be deemed non-responsive and treated accordingly.

MODEL TO BE BID

The model requested in the purchase description that follows is intended to be the "Top of the Line" model for the manufacturer. Sub-standard models that delete trim, functionality, service, and safety items shall not be acceptable. Proposals for manufacturers "Program" trucks will not be considered. A statement from the vendor shall be provided in the proposal that states that the chassis offered is the "Top of the Line" model from the manufacturer.

ROAD TEST CERTIFICATION

A road test shall be conducted with the finished apparatus fully loaded. During this time, the apparatus shall not show loss of power and/or overheating. The transmission driveshaft or shafts and rear axle shall run free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus, when loaded, shall have not less than 25% or more than 45% of the weight on the front axle and not less than 55% or more than 75% on the rear axle.

A. The apparatus must be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed RPM of the engine.

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B. The apparatus must be capable of accelerating from a steady speed of 15 mph to a true speed of 35 mph within 30 seconds. This shall be accomplished without moving the gear selector.
C. The fully loaded apparatus shall be capable of obtaining a speed of 50 to 55 mph on a level concrete highway.
D. The manufacturer shall furnish copies of the engine installation approvals signed by the appropriate engine company upon delivery of the chassis to the Fire Department. No exceptions will be permitted to this section of the document.
E. The manufacturer shall furnish copies of the transmission approval signed by the transmission manufacturer upon delivery of the chassis to the Fire Department. No exceptions will be permitted to this section of the document.
F. The manufacturer shall furnish copies of the front and rear axle approvals upon delivery of the chassis to the Fire Department. No exceptions will be permitted to this section of the document.

ROAD TEST FAILURE

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may be made at the option of the manufacturer within thirty (30) days of the first trials. Such trials shall be final and conclusive and failure to comply with changes as the purchaser may consider necessary to conform to any clause of the specifications within thirty (30) days after notice is given to the manufacturer of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser, or its use by the Fire Department during the above specified period with permission of the manufacturer, shall not constitute acceptance.

INSPECTION TRIPS

One (1) inspection trips for up to four (4) Fire Department personnel each shall be made to the manufacturer's facility during the course of construction of the apparatus. Air travel (for distances over 250 miles), meals, and lodging expenses shall be included.

BID DRAWINGS REQUIRED

The vendor shall submit two (2) copies of D-size (full size) engineered construction drawings with its proposal. No proposals will be considered without complete engineered construction drawings submitted with the proposal. Submitted drawings must be specifically for the proposed apparatus and depict all major specified components.

These drawings shall show the following minimum views: front view; street side with proposed chassis; curbside with proposed chassis; rear view; top view with proposed chassis; hose bed height, and approach and departure angle.

The drawings shall contain the dimensions for the overall length (in feet and inches), overall height (in feet and inches), wheelbase, angle of approach, angle of departure, overall width of the apparatus, hose bed volume dimensions indicating the hose bed width, length, and height.

Submission of "similar to" or "standard" drawings, or statements referencing submission of drawings after award of contract, will disqualify the bid.

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APPARATUS FAMILIARIZATION

Fire Department personnel shall be instructed as to the use of the entire apparatus including, but not limited to, chassis, fire pump system, the apparatus, and supplied equipment.

The familiarization specialist shall remain at the Fire Department for one (1) days (not less than eight (8) hours), to provide instruction to all personnel, or as instructed by Chief of the Department. All meals, motel, and travel costs shall be the responsibility of the successful bidder.

NFPA 4.3.2 After delivery of the fire apparatus, the purchaser shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment as defined in NFPA 1002, Standard for Fire Apparatus Driver/Operator Professional Qualifications, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program.

DELIVERY DATA REQUIREMENTS

Delivery of the completed vehicle shall be no more than three-hundred twenty (320) calendar days after acceptance of the formal contract by the successful proposer.

The manufacturer shall specify in his bid the number of calendar days after acceptance of the formal contract by the manufacturer, that the completed vehicle shall be delivered to the purchaser. The manufacturer shall not be held liable for damages arising from its failure to make or delay in making deliveries because of fire, flood, riot, major component shortage, accidents, acts of God, or any circumstances beyond their control.

Information required at time of delivery to be supplied by the manufacturer:

A. Line set ticket showing parts used by the manufacturer in construction of the cab and chassis.
B. Electrical "as built" schematic booklet.
C. Air system "as built" schematic booklet.
D. Final build data sheet showing serial numbers for the following:
   1) Cab and chassis Vehicle Identification Number
   2) Engine
   3) Transmission
   4) Front axle
   5) Rear axle(s)
   6) Each tire showing mounting location on the chassis.
   7) Apparatus Serial Numbers

E. Final build measurement data sheet showing the following:
   1) Bumper extension
   2) Wheelbase
   3) Rear overhang
   4) Cab measurements for the ground to the bottom of the cab at all four corners and the frame to cab extreme at the frame height for all four corners of the cab.
   5) Suspension measurements for the ground to the top of the frame at the centerline of the front axle and the centerline of the rear axle or centerline of the tandem axles.
   6) Overall Height, Length, and Width of completed body.

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F. Unless otherwise specified, a minimum of one (1) copy of complete, as delivered apparatus and chassis operation and general maintenance instructions including, but not limited to the chassis, engine, transmission, axles, and lubrication charts shall be supplied. A CD is preferred.

CHASSIS OPERATOR'S MANUAL

Operator's Manual w/Parts List - One Set shall be provided with the chassis.

An electronic Electrical System Manual shall be provided.

- This manual shall provide complete wiring schematics for the vehicle.

- The manual shall be provided with diagrams of the vehicle showing the wiring harness routing within the vehicle. Each of these diagrams shall include the connectors between the harnesses that provide a hyperlink to a drawing of the actual connector where pin functions can be examined.

- Schematics for each system of the vehicle shall be provided with hyperlinks to the connectors for pin designations and to the vehicle drawings for harness location within the vehicle.

An electronic Air System Manual shall be provided.

- This manual shall provide complete air system schematics for the vehicle.

- The manual shall be provided with diagrams of the vehicle showing the air tubing routing within the vehicle.

- Schematics for each system of the vehicle shall be provided with hyperlinks to the tanks and valves and to the vehicle drawings for exact location within the vehicle.

IN SERVICE WEIGHTS

The fully loaded, in service apparatus will be weight checked for proper axles and suspension. If the axles and suspension are deemed to small, the bidder, at his expense, will be required to make the necessary replacements and corrections.

VEHICLE SUPPORT DOCUMENTATION

For long term support of the vehicle and in order to provide proper maintenance, the following information shall be required with the delivery of the vehicle. It may be required to have this information provided during the bid process to ensure that the proper information is available from a potential vendor. Failure to provide this information in the exact requested format as a minimum shall be cause for rejection of the bid. Three-ring binders filled with vendor catalogs being supplied as a maintenance and operation manual shall not be acceptable under the conditions of this proposal.

This vehicle shall be in operation for a minimum of twenty (20) years. Fiscal responsibility of the vehicle extends beyond the initial cost of the apparatus. Reducing service and maintenance costs of the vehicle during it's useful life is a major consideration in the purchase of this apparatus. The requested documentation shall be utilized to properly train personnel for operation of the vehicle and to develop proper preventative maintenance programs to reduce operating cost of the vehicle.

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With delivery of the vehicle, the following information shall be provided in electronic format. The format shall be such as to provide hyperlinks to major categories and/or subjects from a content page. A word search engine shall provide quick transport of the user to any area within the document when a keyword or phrase is found. The entire manual shall be able to be printed from the electronic media to paper form. The manual must be compatible with both PC and Mac platforms.

An electronic Operator's and Maintenance Manual shall be provided. This manual shall encompass complete information for the vehicle and vehicle systems including all accessories and/or options.

The Operator section of the manual shall describe each component, gauge and switch with proper operation and operational warnings.

The Maintenance section of the manual shall provide proper maintenance of the vehicle for all systems and components supplied.

A Lubrication section shall be provided in the manual. This section shall provide all lubricant types and capacities for the vehicle. Included in this section of the manual shall be lubrication diagrams to visually locate the lubrication points of the vehicle.

An electronic Electrical System Manual shall be provided. This manual shall provide complete wiring schematics for the vehicle.

The manual shall be provided with diagrams of the vehicle showing the wiring harness routing within the vehicle. Each of these diagrams shall include the connectors between the harnesses that provide a hyperlink to a drawing of the actual connector where pin functions can be examined.

Schematics for each system of the vehicle shall be provided with hyperlinks to the connectors for pin designations and to the vehicle drawings for harness location within the vehicle.

An electronic Air System Manual shall be provided. This manual shall provide complete air system schematics for the vehicle. The manual shall be provided with diagrams of the vehicle showing the air tubing routing within the vehicle.

Schematics for each system of the vehicle shall be provided with hyperlinks to the tanks and valves and to the vehicle drawings for exact location within the vehicle.

Additional documentation to be provided:

A vehicle build sheet shall be provided. This build sheet shall include the major assemblies used in construction of the vehicle. Final inspection data including the serial numbers of the engine, transmission, axles, and tires equipped on the vehicle.

SUBMISSION OF BID REQUIREMENTS

Proposals shall be submitted in accordance with the following instructions:

1. Each vendor shall submit their own proposal specifications, detailing their construction. This is necessary to evaluate each bidder's actual intent of building the equipment as specified herein. The vendor's proposal format shall be the same order as these specifications to allow the Fire Department to compare all bids easily and prevent confusion. Failure to comply shall be cause for rejection of the bid.

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2. Each proposal shall include the weight ratings, wheelbase, principal dimensions, transmission and axle ratios, and a certified brake horsepower curve showing the maximum no load governed speed of the engine proposed.
3. Failure to submit detailed information or drawings where specified herein shall result in rejection of the bid.
4. Bids shall be returned in a sealed envelope clearly marked "BID FOR FIRE APPARATUS". Facsimile bids are not acceptable.
5. Verbal bids and changes in the bid price after the bid opening prior to award shall not be allowed. Any such attempt shall not be accepted and cause immediate rejection of the entire bid.

ORIGIN OF MANUFACTURER

Any manufacturer submitting a proposal or bid to these specifications shall meet the following conditions:

1. The manufacturer of the apparatus herein specified shall be wholly owned (100%) and managed by a company, corporation and/or parent company that is wholly based and permanently resides in the United States of America.
2. The company, corporation, and/or parent company, and all assets belonging to such, shall be wholly owned and managed by the entities specified above.
3. Any proposal, bid or response to these specifications by any foreign based, owned or managed (in part or in whole) company, corporation and/or parent company, shall be cause for immediate rejection.
4. Any proposal, bid or response to these specifications by any company, corporation and/or parent company, that is owned, operated, managed or held in contract, in part or wholly by a foreign interest partnership or other agreement, shall be cause for immediate rejection.

CUSTOM CHASSIS - SINGLE SOURCE MANUFACTURER

The chassis shall be designed and manufactured by the apparatus builder in the manufacturer's facility. The manufacturer shall demonstrate evidence of manufacturing similar custom vehicles for at least thirty five (35) years.

Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source shall be "a manufacturer that designs and manufactures their products using an integrated approach, including the cab and chassis, pump module, apparatus body, and aerial device being design integrated by the bidder. The warranties relative to the chassis, body and aerial design (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body, chassis, and aerial). The bidder shall provide evidence that they comply with this requirement. No exceptions will be permitted to this section of the document.

CHASSIS FRAME

The frame shall be designed to industry standards. The manufacturer shall provide a life time warranty to the original purchaser of the chassis. The frame rails shall be 10.5" X 3.5" X .375" heat treated steel.

Two (2) inner frame liners with dimensions of 9.687" x 3.125" x .3125" and 9.0" x 4.0" x .3125" shall be added to provide additional strength and reduce deflection. The second rail shall extend from the centerline of front axle and taper 45 degrees forward and shall extend to the rear of the main frame rail. The third rail shall extend from the rear of the front rear spring hanger to the front of the forward rear spring hanger.

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The rails shall be 110,000 psi minimum yield and shall have a minimum section modulus of 40.09 cu. in. calculated by using the geometric shape method. The resulting frame rail resistance to bending moment shall be 4,406,900 in. lb. per rail (44.90 cu. in., 4,939,088 in. lb. square corner).

To insure the maximum clamp load for the fastener prevailing torque the crossmembers shall be bolted in place using grade 8 bolts, hardened washers, and grade "C" distorted thread locknuts. Flanged head fasteners are not acceptable. The top of the frame rails shall be free of bolt heads.

Frame engine cutouts shall be made with a plasma torch to minimize the heat affected zone of the cut. All cutouts shall have a minimum of 6 inch transition between rail flange cut depths to reduce the stress concentrations throughout the cutout area. The root of all transition areas shall have a minimum of a 2 inch radius to reduce stress concentrations at the root.

The main and first inner frame rails shall be powder coated prior to chassis painting to reduce the effect of harsh road chemicals.

TOW HOOKS

Two (2) chromed tow hooks shall be provided and shall be attached directly to the front frame extension under
the bumper. These tow hooks shall be attached with two Grade 8 bolts with hardened washers and Grade "C" distorted thread locknuts.

FRONT BUMPER

A 10" high heavy-duty 10 gauge, polished stainless steel, wrap around, 2-rib front bumper shall be provided the full width of the cab.

BUMPER EXTENSION

The front frame extension shall be bolted directly to the main rail. The extension and main rail joint shall have a 3/8" thick side plate for reinforcement. The completed apparatus must be able to be lifted at the front bumper without structural damage to the front extension for towing of a disabled vehicle.

The front bumper face shall extend 21 inches ahead of the front face of the cab skin.

GRAVELSHIELD

A gravelshield shall be installed filling the area above the extension rails. This gravelshield shall be constructed of .125" thick NFPA non-skid, bright, non skid, aluminum treadplate. The gravelshield shall be supported at the front by the top flange of the stainless steel bumper. At the rear, the gravelshield shall be supported by a steel substructure.

CENTER HOSE REEL

A well shall be installed in the center of the gravelshield. The well shall be constructed of .125" aluminum. The upper edges of the hose well shall be tapered to allow for smooth, snag free removal of the hose. In the well shall be installed an electric rewind hose reel installed. One hundred Fifty feet of 1” Reel-Tex hose (One 100’ and one 50” sections) shall be furnished. An opening in the bumper for hose rollers shall be

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furnished to deploy the hose without opening the cover. The hosereel shall be mounted between the bumper extension rails.

A diamond plate hinged cover shall be furnished. A "D-Ring" handle shall be used to open the lid with a gas shock to hold the lid in the open position.

CHASSIS GREASE SYSTEM

The chassis shall be equipped with a VOGEL Centralized Lubrication System. This system shall provide automatic grease application to the following wear points:

Kingpins (4), Tie Rods (2), S-Cams (2), Slack Adjusters (2), Spring Pins (6), Draglink (2),

S-Cams (4), Slack Adjusters (4), Spring Pins (4)

This grease system shall utilize NLGI000. The system shall be powered by an electrically driven gear pump, 12 volts, 192 watts. The gear pump shall be mounted to a reservoir with a capacity of 2.7 liters. The pump is to operate against a back pressure of 38 bar nominal, with an output of 160 cc/min.

Distribution to all lubrication points is by piston distributors. The distributors shall utilize metering nipples. Metering for the nipples shall be in the increments of 0.1, 0.2, 0.3, 0.4, 0.6, and 1.0 cc. The metering nipples shall be able to be field changed to provide a tailored grease application to the chassis points. The distributor shall dispense a metered volume of lubricant into the lube point after the electric motor gear pump has cycles to the off-time mode.

The cycle time of the system shall be determined by an electronic controller, which regulates the on and off time of the pump. The controller shall permit the feedback of the pressure switch to highlight the end of the lube cycle.

A hand pump and container of grease shall be shipped loose with the chassis for initial maintenance by the department.

FRONT AXLE

The front axle shall be a MERITOR axle with the minimum rated capacity of 21,500 lbs. The actual capacity shall be determined by the manufacturer. This to include the fully loaded vehicle, 1500 pounds of personnel and equipment in the cab, and 8,000 pounds of hose and equipment in the body and full tank of water and full tank of fuel.

CRAMP ANGLE

Due to the traffic, narrow streets and sharp corners the chassis turning radius is important, both left and right turns.

The bidder shall supply, with the bid, an engineering drawing that provides a top view of the apparatus with the following turning ability information listed in decimal feet: SAE turning radius, curb to curb radius, bumper swing radius, inside radius. The calculations must be performed according to SAE J-695.

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FRONT AXLE OIL SEALS

The front axle shall be equipped with oil bath type oil seals as supplied on the axle from the axle manufacturer. The spindles shall be equipped with transparent covers for oil level inspection.

FRONT AXLE DISC BRAKES

MERITOR DiscPlus, EX-225, air disc brakes shall be installed on the front axle. The DiscPlus air disc brakes shall provide improved fade resistance and wet weather performance. The rotors shall be vented to facilitate brake cooling.

FRONT SUSPENSION

The front suspension shall be determined by the manufacturer based of calculated load and allowing a 10% overload factor.

Double acting hydraulic shock absorbers are to be installed.

STEERING SYSTEM

The steering shall be equipped with single or dual Ross or Sheppard integral power steering gears. The engine shall be equipped with a gear driven pump.

A remote steel reservoir shall be provided with the ability to check the fluid level when the cab is in the lowered position.

CRAMP ANGLE

Due to the traffic, narrow streets and sharp corners the chassis turning radius is important, both left and right turns.

The bidder shall supply, with the bid, an engineering drawing that provides a top view of the apparatus with the following turning ability information listed in decimal feet: SAE turning radius, curb to curb radius, bumper swing radius, inside radius. The calculations must be performed according to SAE J-695.

FRONT TIRES

The front tires shall be 425/65R22.5-20PR (L) GOODYEAR G-286A all weather tread, tubeless radial tires. These tires shall be mounted on 22.5" x 13.00" rims polished aluminum wheels with Dura Bright finish. Stainless steel 'baby moon' hub caps with an opening for viewing the oil seal cover, and bright finished nut covers.

TANDEM REAR AXLE

The rear axle shall be a MERITOR tandem axle assembly with a minimum rated capacity of 52,000# rating for the fire service.

VEHICLE TOP SPEED

The rear axle shall be geared for a top speed of 62 to 65 mph at engine governed RPM.

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AXLE DIFFERENTIAL LUBE

The axle shall have the initial factory fill made with non-synthetic axle lube meeting the axle manufacturer's recommendations.

REAR AXLE OIL SEALS

The rear axle shall be equipped with premium oil bath type oil seals as supplied on the axle from the axle manufacturer.

TANDEM REAR AXLE DISC BRAKES

MERITOR/ROCKWELL DiscPlus, EX-225, air disc brakes shall be installed on the Meritor/Rockwell tandem rear axle. The DiscPlus air disc brakes shall provide improved fade resistance and wet weather performance. The rotors shall be vented to facilitate brake cooling.

These brakes shall be rated at a maximum of 54,000# capacity on a tandem rear axle assembly.

TANDEM AXLE REAR SUSPENSION

The actual rear suspension shall be determined by the manufacturer based of calculated load and allowing 1500 lbs for personnel and equipment in the cab and 8,000 lbs in body for equipment, hose etc.

TANDEM AXLE REAR SUSPENSION - RATING

The tandem axle suspension shall have a rated capacity of 52,000 lbs. The suspension shall be provided with bronze center bushings and rubber end bushings.

The walking beams for the tandem axle suspension shall be 54 inches in length.

REAR TIRES

The rear tires shall be 12R22.5-16PR (H) GOODYEAR UNISTEEL G149 RSA highway tread, tubeless radial tires. These tires shall be mounted on 22.5" x 8.25" rims polished aluminum wheels with Dura Bright finish.
Stainless steel "Lincoln Hat" hub cover and bright finished nut covers.

Tandem rear axle GAWR using these tires shall be 54,000 lbs. @ 120 psi.

AIR SYSTEM

An air brake system meeting the requirements of the FMVSS-121 shall be provided. The system shall consist of four (4) reservoirs with a 6,543 cu. in. volume. One (1) 2,181 cu. in. additional reservoir shall be connected to the chassis air system to provide an air supply for accessories such as air powered tools. This reservoir shall include a pressure protection valve on the inlet side to allow full use of this tank without draining air from the chassis air system. Total air reservoir must be a minimum of 8,700 cu.in.

A quick build up system shall be provided, capable of building enough air pressure to release the spring brake in less than thirty (30) seconds, when starting with the entire air system at zero pounds pressure.

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The brake system shall be a split system. One (1) system serving the rear brakes and one (1) system serving the front brakes. The two (2) systems shall be connected with a double check valve that shall automatically shuttle air from the front system to the rear system should loss of air pressure occur. This system shall also modulate the amount of air so the spring brakes shall apply in direct relationship to the amount of pressure applied to the treadle valve.

The brake system shall be equipped with a Bendix SR-1 valve to provide modulated spring brakes in the event there is low air pressure in the rear axle air supply reservoir.

The spring brakes shall be piped in such a manner that if the treadle valve is depressed while the spring brakes are applied, the spring brakes shall release and remain released as long as the treadle valve is depressed. They shall reapply immediately when the treadle valve is released.

The piping in the air system shall be 2-ply nylon reinforced color coded tubing for all stationary lines.

AIR DRYER

The air system shall include a MERITOR/WABCO System Saver 1200 air dryer. The dryer shall have a capacity of 30 CFM of air flow.

The air dryer shall have a spin on desiccant cartridge for ease in servicing the dryer desiccant.

The air dryer shall incorporate an integral turbo cut-off valve. The turbo cut-off valve shall close the path between the air compressor and the air dryer purge valve during the compressor "unload" cycle. This shall allow the air dryer to purge the water and contaminates without any loss of turbo boost or engine horsepower.

A 12 volt, 100 watt heated moisture ejector shall be an integral part of the air dryer. This heater shall be thermostatically controlled. The electrical connection for the heater shall use a sealed electrical connector to protect against moisture and corrosion.

AUTOMATIC MOISTURE EJECTORS

All air reservoirs of the chassis air system shall be supplied with automatic moisture ejectors. The reservoir drain valves shall allow the accumulation of contaminants that are collected in the reservoirs to be drained off to the atmosphere.

AIR INLET / OUTLET

An outside air system inlet/outlet connection shall be provided and mounted in the driver's cab step area. This
connection shall be clearly labeled as to the function. A pipe thread frame coupling shall be provided with 1/4" npt threads. The fire department shall install the appropriate hose quick connect fittings.

MERITOR/ROCKWELL/WABCO ABS BRAKE SYSTEM

A four channel, single rear axle model, MERITOR/ROCKWELL/WABCO ABS Braking System shall be supplied.

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A frame mounted electronic control unit (ECU) shall monitor and control wheel speed during braking. Wheel sensors, constantly monitoring wheel speed, send information to the ECU. If a wheel begins to lock the ECU transmits an electrical impulse to modulator valves that can apply, release or hold the air pressure in the brake chambers. The rapid modulation of air pressure prevents wheel lock-up and increases driver control.

This ABS system shall be a 4S/4M system with four (4) wheel speed sensors and four (4) modulator valves.

If a fault occurs in one wheel, that wheel shall have normal (non-ABS) brake function. The other wheels shall continue to provide the ABS function. If the ABS system should fail completely, the brake control shall be returned to normal (non-ABS) braking.

An ABS warning light shall be installed on the driver's dash message center. This warning light shall cycle through a test stage at the point of ignition turn on and remain illuminated until the vehicle reaches approximately four (4) MPH. The light shall illuminate in other conditions to warn of an ABS system failure and shall illuminate when the diagnostic function is activated.

LASER ALIGNMENT

The chassis shall have a laser alignment performed at the factory before delivery.

DIESEL ENGINE

The chassis shall be powered by a CUMMINS Diesel engine as described below:

MODEL: ISM-500
NUMBER OF CYLINDERS: Six
BORE AND STROKE: 4.92" X 5.79"
DISPLACEMENT: 661 cu. in.
RATED BHP: 500 @ 2000 RPM
454 @ 2100 RPM
TORQUE: 1463 @ 1400
1550 @ 1200
COMPRESSION RATIO: 16.1:1
GOVERNED RPM: 2100
A Wabco 18.7 cfm compressor shall be provided.

All standard equipment on the engine shall be include.

ENGINE OIL

The engine shall have the initial factory fill made with a non-synthetic engine oil meeting the engine manufacturer's recommendations.

EMISSION CONTROLS

The engine supplied shall meet the minimum standards of the EPA 2007 requirements. If the EPA 2007 engines are available then the 2010 EPA standards will apply..

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ENGINE BRAKE

A "JACOBS" Engine Brake shall be supplied.

The driver's dash shall include an OFF / LOW / HIGH engine brake control switch.

Activation of the engine brake shall occur at zero throttle position. The transmission ECU shall be programmed to operate in the pre-select downshift mode to maximize the retarding power of the engine brake.

The brake lights shall illuminate when the Jacobs Brake is in operation.

The Jacobs brake shall be inoperative when the chassis is in pump mode.

The "JACOBS" engine brake shall be covered under the standard five year Cummins engine warranty.

ENGINE FAST (HIGH) IDLE

The chassis shall be equipped with an Electronic Idle Control (EIC) for the electronic engine. Preset speed is factory adjustable.

The fast idle provision shall only function when the parking brake is set and the transmission is in neutral. Manual selection of the fast idle shall be controlled by a driver's momentary switch.

Automatic activation of the fast idle shall occur when a low voltage condition exists, the truck is in neutral and the parking brakes are applied.

Cancellation of the fast idle shall be achieved by resetting the manual switch or by depressing the service brake pedal.

ENGINE COOLANT FILTER

A precharged spin-on corrosion inhibitor/water filter shall be installed in the cooling system. Shut off valves shall be supplied on both sides of the filter to facilitate element changing with out loss of cooling system fluid.

AUXILIARY ENGINE COOLER

The cooling system shall have one (1) SENDURE auxiliary engine cooler mounted in the upper radiator water pipe. The apparatus shall have the fire pump water circulated to the cooler from a valve located on the apparatus pump panel.

ENGINE COOLANT RADIATOR

The engine coolant radiator shall have sufficient capacity to perform under the engine manufacturer installation requirements. The chassis manufacturer shall demonstrate the ability to meet this requirement with the submittal of an approved EPQ to the fire department for the apparatus.

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COOLANT RECOVERY SYSTEM

A coolant recovery system shall be installed on the chassis. This tank is designed to capture coolant overflow when the engine coolant warms and expands. As the engine cools the overflow is then pulled out of the tank and back into the radiator, thus maintaining proper coolant levels.

CHARGE AIR COOLER RADIATOR

The engine charge-air cooler shall have sufficient capacity to perform under the engine manufacturers installation requirements. The chassis manufacturer shall demonstrate the ability to meet this requirement with the submittal of an approved EPQ to the fire department for the apparatus.

COOLANT HOSES

The entire chassis cooling system shall have premium rubber hoses. All clamps to be stainless steel worm drive type clamps.

LIFE COOLANT

The coolant system shall contain a mixture to keep the coolant from freezing to a temperature of -34 degrees F.

SPARK ARRESTOR

A spark arrestor shall be installed in the chassis air intake system. This arrestor shall be mounted behind the intake grille to filter out airborne embers.

HORTON FAN

A HORTON fan clutch shall be installed on the engine. A manual switch shall be provided, in the dash, to over ride the fan control in event of fan failure or conditions that may result in overheating of the engine.

EXHAUST SYSTEM

A single exhaust pipe shall be provided for the engine. The exhaust pipe shall be supplied with a 1500 degree, fiberglass tape with vermiculite. The wrap shall extend from the engine turbo charger to just below the frame rail.

The aluminized muffler shall be located under the frame on the right side of the apparatus.

The tailpipe shall extend from the exhaust muffler/aftertreatment device to the rear of the vehicle making a 90° bend to exit the vehicle ahead of the rear tires on the curbside of the vehicle. The end of the pipe shall be cut square or perpendicular to the exhaust pipe centerline.

TRANSMISSION

The transmission shall be an Allison 4000EVS automatic transmission with electronic controls.

The transmission shall be equipped with a lock-up control circuit that shall automatically shift the transmission into 4th gear lock-up when the pump is shifted into gear.

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TRANSMISSION COOLER

An automatic transmission cooler shall be provided as an integral part located in the bottom tank of the radiator. It shall be designed to withstand 165 psi working pressure and an intermittent pressure of 250 psi. The cooler shall be of sufficient size to maintain the operating temperature within the recommended limits of the transmission manufacturer.

TRANSMISSION DRAIN VALVE

A drain valve, not plug, shall be installed in the transmission oil pan. The valve shall be made of corrosion resistant forged brass and stainless steel. The ball shall provide a full flow opening fro efficient draining and a perfect seal when closed. The valve opening lever shall be provided with a lift and turn safety lock to prevent accidental opening of the valve. The discharge side of the valve shall have a nipple to allow a hose to be installed to drain waste oil into a container.

TRANSMISSION FLUID

The transmission shall be provided with heavy-duty transmission fluid meeting Allison specification TES-389.

FIVE SPEED PROGRAMMING

The transmission shall be programmed for five speeds. The transmission shall have the following gear ratios.

First - 3.51
Second - 1.91
Third - 1.43
Fourth - 1.00
Fifth - 0.74
Reverse - 4.80

The transmission shall be able to shift from first through fifth gear without operator intervention. The chassis shall be geared for the top speed in 5th gear.

TRANSMISSION RANGE SELECTOR

The transmission shall be controlled by a push button type shift control. It shall be internally illuminated for night operation.

TRANSMISSION OIL LEVEL SENSOR

The transmission shall be equipped with the oil level sensor (OLS). This sensor shall allow the operator to obtain an indication of the fluid level from the shift selector. The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

DRIVELINES

Universal joints and driveshafts shall be SPICER 1810 series or equal. The driveshaft tube shall be a minimum of 4.5" diameter with a .259" tube wall thickness. The driveshaft slip joints shall be coated to

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reduce sliding friction and thrust under high torque loads. Permanent driveline installations shall be balanced to prevent vibration.

FUEL TANK

The fuel tank shall have a capacity of 50 gallons (US) and be D.O.T. certified. It shall be mounted with straps bolted to the bottom frame flange to allow for easy removal. The tank construction shall be of 12 gauge steel with single fuel pickup and return tubes. The baffled tank shall be vented to prevent low vacuum and facilitate rapid filling.

The tank shall have a 2" NPT fill to the driver's side of the chassis.
The fuel tank sending unit is to be mounted to the driver's side of the fuel tank for easy replacement without removing body panels.

FUEL LINES

Polyamide fiber, nylon braided, reinforced tubing with push-on reusable fittings shall be provided for the chassis fuel lines.

FUEL SHUT-OFF VALVE

A, ball type, fuel line shut off valve shall be installed in the suction side fuel line. The shut off valve shall be located near the inlet to the primary fuel filter.

FUEL/WATER SEPARATOR

The Cummins engine shall be equipped with an integrated fuel / water separator with a self venting bottom drain valve. This filter shall be able to remove up to 95% of dissolved water and up to 99% of free standing water.

ALTERNATOR

A LEECE-NEVILLE model LN4867J 270 Amp alternator shall be installed on the engine. This alternator is internally rectified and regulated.

FIRETRUCK CAB

The cab shall be the manufacturers “Top of the Line” model.

The apparatus shall be designed to operate in emergency conditions. These conditions require the apparatus to maneuver into areas at a high rate of speed. To facilitate in these operations a cab-over-engine design is required in order to reduce the overall length of the apparatus thus increasing the maneuverability.

The cab design must be such to provide safe and efficient transport of emergency personnel. The cabin shall be designed with four (4) side doors of the largest size possible and with a grab handle and step arrangement to provide ease of entry and egress.

There shall be up to four (4) positions available for occupant transport with a minimum of two (2) forward facing seating positions in the cab. The number of seats and seating locations are described in detail later in this document.

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The apparatus cab shall be of the latest in automotive design, styling and appearance.

CAB MATERIALS AND CONSTRUCTION

The extruded aluminum *xl* cab shall have the following material gauges as a minimum:

- Cab floor - 3/16" (.190") aluminum
- Front skin - 3/16" (.190") aluminum
- Cab side panels - 3/16" (.190") aluminum
- Cab rear wall - 3/16" (.190") aluminum
- Cab driver's floor - 3/16" (.190") aluminum
- Cab officer's floor - 3/16" (.190") aluminum
- Cab crew area floor - 3/16" (.190") aluminum
- Cab roof - 3/16" (.190") aluminum
- Cab doors - 3/16" (.190") aluminum

Roof Rail Section Extending from the front to the rear of the cab above the doors the cab shall have and extruded aluminum section. This section shall be designed to interlock with the roof sheet and incorporate the door drip molding in one single piece.

Upper Transverse Member Amid ship in the cab there shall be a boxed beam header assembly located transverse in the cab from left to right.

Front Door B-Post This vertical box section of the cab located behind each of the front doors provides the slam post for the door latch assembly. This section also is a main member in the cab skeletal system. The B-Post ties into the Upper Transverse Member to provide torsional stiffness in the open space design of the cab.

Rear Door B-Post The box assembly design of the rear door B-post provides an anchor for the rear door latch assembly. This section is the main vertical support at the cab rear corner providing the anchor point for the rear wall structural lattice network.

Roof Panel Rails - The roof panel sub-assembly shall have extruded hat section supports bonded to the roof skin. These roof hat sections shall be joined to the Cab Roof Rail Section to complete the upper cab skeletal structure. These completed Roof Panel Rails shall provide a grid for maximum roof crush and deflection strength. The roof shall support a minimum weight of 250 lbs. / sq. ft. without permanent roof deformation.

Rear Wall Rails - The rear wall assembly shall have extruded hat section supports bonded to the wall skin. These sections shall be joined to the Roof Panel Rails and to the rear door slam post and floor provide a rear wall grid structure with maximum strength.

Cab Front Wall - The front wall of the cab shall be designed with a double wall construction to reduce the effects of exterior noise in the crew and operator compartment.

CAB CRASHWORTHINESS TEST

Dynamic tests shall be performed to evaluate the crashworthiness of the proposed vehicle cab configuration to the requirements of NFPA 1901-09 section 14.3.2.

Cab roof strength shall be tested utilizing the dynamic preload criteria from SAE J24221 paragraph 5 specifications and procedures.

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Front impact strength integrity shall be tested utilizing SAE J24202 with ECE R293 Annex 3 paragraph 4 equivalent energy.

Quasi-static roof strength shall be based on SAE J2422 paragraph 6 and ECE R293, paragraph 5 specifications and procedures.

A letter of certification shall be provided upon request by the department.

CAB DIMENSIONS

The cab shall have the following overall dimensional requirements:

- Overall Width - 100 inches
- Center of front axle to back of cab - 60 inches
- Center of front axle to front of cab - 74 inches
- Windshield area - 3,756 sq. in. minimum
- Front grille opening - 478 sq. in. minimum
- Combined side grille opening - 84 sq. in. each minimum
- Cab full tilt angle - 45 degrees minimum
- Cab full tilt height - 185 inches maximum

Cab interior dimensions shall be provided as a minimum in the following chart:

- Drivers side floor width 25-1/2 inches minimum
- Floor to the ceiling in the driver and officers area of the cab 59-1/2 inches minimum
- Floor to the top of the doghouse 28-1/2 inches maximum
- Officers side floor width 24-1/2 inches minimum
- The measurement across the floor from the rear wall to the first vertical portion of the Engine enclosure 39 inches
- Floor to the ceiling in the rear of the cab 65-3/4 inches minimum

CAB DOORS

The cab entry and egress shall be designed for a firefighter in full turnout gear. Each door shall open a minimum of ninety degrees to afford the firefighter maximum space.

The doors shall be of a flush design each having exposed, one-piece, polished stainless steel hinges. The hinge shall be made of 12-gauge material with a minimum hinge pin diameter of 1/4 inch.

The door windows shall have interior and exterior glass weather seals to prevent the influx of exterior air.

The doors shall have exterior and interior paddle type latches for ease of opening with a gloved hand. The paddle latches are to have a rubber gasket, on the outside, separating the handle from the finished painted surface.

FRONT DOORS

The cab front doors shall be of the full-length design enclosing the entire step area of the cab. The door shall be a minimum of 38-1/2 inches wide and 74 inches tall. The front door windows shall have a minimum of

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712 square inch area of viewing glass per door. There shall be a fixed piece of forward glass in each of the front doors.

ELECTRIC WINDOWS

The front (2) roll down door windows shall be equipped with electrically operated mechanisms to control the opening and closing of the windows. Control shall be with a momentary switch near the door.

One (1) additional switch shall be supplied in the driver's door to control both of the power windows from the driver's position.

REAR CAB DOORS

The rear cab doors shall be similar to the forward doors and shall be located directly behind the front wheel well area. These doors shall be 86 inches high x 34 inches wide. Each door shall have a roll down rear window with a minimum glass viewing area of 670 square inches.

REAR WINDOW SAFETY BARS

There shall be a one inch stainless steel grab bar installed on each rear door. This bar is to be installed on the rear door frame even with the window in the down position to prevent firefighters from using the glass in the door for a handle.

CAB DOORS - INTERIOR TRIM

To provided durability the interior of the cab doors shall be finished with full length aluminum panel that is finished with Zolatone high abuse paint. Plastic, ABS or vinyl interior door panels are not acceptable

STOP SIGN - INTERIOR CAB DOOR

A reflective stop sign shall be mounted on each cab door for a total of four (4). The stop sign area shall contain a minimum of 96 square inches of reflective material and be centered on the door lower kick plate area and shall be visible when the cab door is open to traffic.

INTERIOR DOOR LOCKS

All doors shall have door locks with interior controls and exterior keyed door locks. The installation shall be in conformance with FMVSS 206, with specific adherence to 49 CFR 571.206 Section 4.1.3 requiring that "Each door shall be equipped with a locking mechanism with an operating means in the interior of the vehicle". All doors shall be keyed alike. The doors shall be equipped with appropriate safety interlocks to prevent accidental locking of the doors when closed.

CAB GLASS

AS-1 safety laminate glass shall be used in a two piece, wrap around design with a minimum 3760 square inches of windshield area for maximum visibility. The windshield shall have the style of a one-piece assembly with the practical installation of two pieces for lower replacement cost. The windshield shall be readily available from a nationally recognized automotive glass manufacturer that maintains local distribution outlets.

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All glass shall be tinted.

All fixed glass shall be installed with a one-piece triple locked rubber lacing material. Due to long term appearance two-piece chrome trim lock lacing is not desired.

CAB SIDE WINDOWS

Two AS-2 tempered glass, fixed side windows, 26-1/2" high x 16" wide shall be furnished, one on each side behind the forward doors. All glass shall be tinted. These windows shall be installed with a one-piece triple locked rubber lacing material.

SUNVISORS

The driver and officer side of the cab shall be equipped with a sun visor. The vinyl covered visors shall be a minimum of 17-1/2" by 9".

WINDSHIELD WIPERS

Two speed electric pantograph wipers shall be installed. These wipers shall have minimum 24" blades and have 28 1/2" wet arm electric pump washers. A 70 oz. Minimum windshield washer reservoir shall be furnished.

INTERMITTENT WIPER CONTROL

A rotary combination intermittent electric wiper / washer switch shall be provided on the left hand side of the driver's dash.

STEERING WHEEL AND COLUMN

The steering column shall be a DOUGLAS or equal tilt / telescopic type with an integral high beam / turn signal control switch. The column shall have self-canceling design for the turn signal switch. A 4-way warning "Hazard" light switch shall be mounted on the column. For safety, a rubber boot shall be installed to cover the steering shaft from the dash to the floor.

The steering wheel shall be a minimum of 18-inch diameter, covered with a padded absorbite finish. A lever on the left side of the steering column shall control the telescopic feature of the steering column.

FASTENERS

All cab exterior fasteners shall be stainless steel type fastened to the cab with nutserts.

BATTERY ACCESS

The rear cab steps shall have a removable kick panel, providing access to the batteries for routine maintenance and inspection.

CAB CORROSION TREATMENT

The cab shall have a corrosion preventative material conforming to Mil Spec C-16173-C, Grade 1, applied during and after construction. A 10-year warranty against perforation due to rust or corrosion shall be

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furnished for the cab.

EMI/RFI PROTECTION

The apparatus shall incorporate the latest designs in the electrical system with state of the art components to insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

The apparatus proposed shall have the ability to operate in the environment typically found in fire ground operations with no adverse effects from EMI/RFI.

EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring that utilizes shielding and loop back grounds where required. The apparatus shall be bonded through wire braided ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode protected to prevent transient voltage spikes.

In order to fully prevent the radio frequency interference the purchaser shall be requested to provide a listing of the type, power output, and frequencies of all radio and bio medical equipment that is proposed to be used on the apparatus.

BATTERY BOX TRAY

The battery box trays shall be painted steel. The battery hold down brackets hardware shall be black powder coated to resist corrosion.

BATTERY BOX COVER

To reduce road spray a sand paper abraded finish aluminum cover shall be installed on each battery box.

BATTERY BANK

A single battery system shall be provided, utilizing six (6) high cycle type Group 31 batteries.

This system shall be capable of engine start after sustaining a continuous 150 amp load for 10 minutes with the engine off (NFPA-1901).

A battery disconnect switch (Rated at not less than 450 amps continuous) shall be used to activate the system and provide power to the power panel. A green pilot light shall illuminate to indicate that the battery bank is activated.

All battery wiring shall be "GXL" battery cable capable of handling 125% of the actual load. It shall be run through a heat resistant flexible nylon "HTZL" loom rated at a minimum of 300 degrees Fahrenheit. All cable connections shall be machine crimped and soldered.

STARTING CIRCUIT

One (1) engine start button is to be located on the lower right dash panel. It shall be wired to heavy duty solenoid rated at not less than 1100 amps. The battery indicator light is to be located directly above the start button to indicate that the battery bank is on.

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BATTERY CONDITIONER / CHARGER

A KUSSMAUL AUTO CHARGE 1200 battery charger shall be installed, under the driver's seat, for charging the batteries. This charger shall include an integral bar graph display to indicate the condition of the batteries. Automatic sensing of the battery condition shall stop charging when the batteries are fully charged.

Specifications:
Input: 115 volts 50/60 Hz. 12 amps maximum
Output: 12 vdc 0-40 amps

SHORELINE AUTO-EJECT

A KUSSMAUL Super Auto Eject, model 091-55-20-120, with weatherproof cover shall be mounted on the cab exterior immediately adjacent to the rear of the driver's door.

The Super Auto Eject is to be completely sealed to prevent internal contamination of the working components.

The internal switch arrangement of the Super Auto Eject shall be designed to close and open the 120-volt AC circuit after the mating connector is inserted and before the connector is removed. This design shall prevent arcing at the connector contacts to provide long life.

The electrical connection shall be provided as a 120-volt AC - 20 amp type using a NEMA 5-20P connector.

ENGINE ENCLOSURE

The engine enclosure shall be covered to reduce engine noise and reduce inside temperature.

The under side of the engine enclosure shall be covered with a sandwiched material for interior cab noise and heat rejection. This sandwiched acoustical material shall have one layer of 1/8" foam, a 3/16" single barrier septum and a 7/8" layer of foam to provide on overall thickness of 1-3/16". The sandwich material shall be chemically bonded to prevent layer separation. A finished surface treatment of metalized film shall be provided on the engine side of the barrier. The acoustical barrier shall be held in place with mechanical fasteners in addition to adhesive.

The insulation for protection from heat and sound shall keep the dBa level within the limits stated in the current edition of NFPA 1901.

ACCESS FOR FLUID SERVICING

The engine enclosure shall have a hinged and latched panel to provide access to the engine lubricating oil dipstick, power steering fluid reservoir dipstick and engine coolant recovery reservoir. This access shall allow that these fluid levels can be checked and topped off, if required, without raising the cab.

INTERIOR CEILING PADDING AND TRIM

The cab front interior ceiling shall have a one-piece, removable, sound absorbing headliner to cover all wiring and tubing used for lights and antenna leads.

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REAR WALL COVERING

The rear interior wall of the cab shall have a two-piece, removable, wall covering to finish the interior trim, cover all wiring and tubing used for lights and antenna leads.

FLOOR COVERING

The front and rear floor areas of the cab shall be covered with "HUSHCLOTH" sound barrier floormats. This floormat shall be a three ply material with a 3/16" thick open cell isolation barrier of Polyurethane, a 3/32" thick closed cell Nitrile mid barrier for section reinforcement, and a 1/16" thick embedded pebbled grain wear surface.

INTERIOR CAB STEP TRIM

The cab steps shall be completely enclosed behind each door. The toe kick surface shall be covered with aluminum treadplate trim.

STEP LIGHTS

Four (4) Whelen OS Series LED step well lights shall be supplied. These lights, one in each step well, shall be mounted at the top of the step directed downward toward the lower step. A chrome flange is to be provided for each light. All step well lights shall be illuminated when any door is opened and the battery selector is on.

GRAB HANDLES

One (1) additional molded grab handle shall be installed inside the cab. The handle shall be located on the officer's side on the A Post.

Two (2) additional molded grab handles shall be installed in the cab. These handles shall be located one each side on the B Posts side of the crew area doors.

RADIO COMPARTMENT WITH DOOR

Beneath the officer's seat there shall be a radio compartment with minimum interior dimensions of 19-1/2" wide x 17" long x 7" high. This compartment shall have a side mounted diamond plate door mounted on a piano hinge.

CAB STEP DIMENSIONS

The front cab steps shall have the following overall dimensional requirements:

- Driver's lower step size 10-1/4 inches deep minimum
- Driver's lower step size 29-1/2 inches front to back

- Officer's lower step size 10-1/4 inches deep minimum
- Officer's lower step size 29-1/2 inches front to back

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INTERMEDIATE CAB STEP

The cab shall have a full width intermediate "LaserGrip" anti slip inside step. The intermediate step shall be approximately 9 inches from the top of the lower step to the top of the intermediate step.

INTERIOR CAB STEP TRIM

The cab steps shall be completely enclosed behind each door. No portion of the cab entrance step shall be exposed when the door is in the closed position. The lower step shall be sealed from the under side of the cab to eliminate road splash from entering the step area while the vehicle is driving. The horizontal step surfaces shall be covered with bright aluminum tread plate meeting the requirements of NFPA-1901.

The vertical toe kick surface area of the cab step wells shall be covered with aluminum tread plate.

COMPARTMENT OPEN LIGHT

A Red Open Compartment Flashing Light, Whelen OS Series LED shall be mounted on the face of the overhead panel. A chrome flange is to be supplied with the light.

This compartment open door light is wired with a flasher to the power panel for completion to the compartment door open circuit on the body.

The compartment open light circuit shall be wired so that the light circuit is deactivated when the parking brakes of the apparatus are applied.

A label shall be applied adjacent to the light '**DOOR OPEN**'.

INTERIOR CAB LIGHTING

Four (4) step well lights shall be supplied. The lights shall be Whelen OS Series white LEDs with angled chrome plated covers, one in each step well. All step well lights shall be illuminated when any door is opened and the battery selector switch is on.

DOME LIGHTS

Two (2) red/clear LED clear dome lights shall be supplied. One light shall be installed in the front of the cab centered over the engine doghouse. One light shall be installed centered over the rear crew area. These lights shall be illuminated when any door is open or individually operated with a switch mounted on the light and the battery switch is in the on position.

CAB HEATER / DEFROSTER

The in cab climate control system shall be installed beneath the dash on the officers side of the cab. This unit shall include a three-speed blower, temperature control valve and a 44,000 BTU heater core.

The heater control shall be located on the doghouse mounted control center. The control shall have separate on-off blower speed switch, thermostat control and outlet blend air switch.

There shall be one heat outlet with directional and flow control provided on the driver and one on the officer side of the control center.

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There shall be one under dash floor directed heat outlet provided on the drivers side and one on the officers side of the cab.

There shall be two floor heater outlets, one located on each side of the cab beneath the dash.

There shall be a Max Flow defrost system installed into the front of the cab. The ducting of the Max Flow system shall direct heated air onto the windshield to provide defrost and defog capability.

45,000 BTU AIR CONDITIONING

A climate control system shall be furnished in the cab. The system shall consist of a 45,000 BTU air conditioning evaporator centrally located on the rear of the engine doghouse.

The system is to have a 12.6 cu. in. minimum compressor mounted on the engine to provide the compressed refrigerant to the system. The compressor is to be plumbed to a heavy duty truck, dual fan air conditioning condenser mounted on the cab roof. The condensing unit shall have an aerodynamic shroud that is painted to match the color of the cab roof. There shall be an extended life filter receiver/dryer with a pressure relief valve installed to protect the system from contaminates, moisture, and high pressure. It is to have a sight glass for visual inspection and ease of service.

The evaporator shall have an externally equalized expansion valve and be thermostatically protected to prevent freeze up. Dual high performance 3-speed blowers shall provide a minimum of 700 CFM air flow. Each blower is to be controlled separately. Four (4) forward facing and three (3) rear facing full adjustable diffusers with shutoff capability shall be utilized to direct the air flow through the cab.

The air conditioning on/off switch, thermostat control, and blower switches shall be located on the evaporator unit.

The air conditioning system shall use R134A Freon.

36,000 BTU SUPPLEMENTAL HEATER

A 36,000 BTU auxiliary heater shall be furnished inside the conditioning evaporator unit to provide additional cab heating during cooler weather. The heater core is to be plumbed to the water lines of the engine cooling system.

CAB INSULATION

Foam rubber type insulation shall be installed in the rear wall and the cab ceiling to provide a better sound and heat barrier. The insulation shall be a minimum of 1" thick. The material shall be compliant with FMVSS-302.

DASH TRIM

The drivers cab dash console shall be made of black ABS with an appearance of the latest in automotive design, styling. Accompanying the dash console in the forward section of the cab shall be an officer’s side flat dash for the mounting of a mobile data terminal.

The forward overhead console area shall have an automotive styled black ABS covering. This console shall be provided with a center overhead area to house sirens, officer's side speedometer, AM/FM radio and an

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information center. The console shall have depressed areas for styling with the installation of items such as the visors, electrical access

DRIVER INSTRUMENTATION AND CONTROLS

The cab dash panel shall have black textured anti-glare surface. The gauges shall have red LED back lighting for enhanced visibility. Upon on initial ignition sequence a lamp check function shall illuminate the warning light telltales; the self diagnostic message center shall sequence the warning light telltales if data link communications are lost. The instrument panel shall include the following gauges and indicators.

Electronic speedometer with LCD odometer
Tri cluster gauge that includes:
Electronic tachometer
Engine coolant temperature gauge, with warning light and buzzer
Engine oil pressure gauge, with warning light and buzzer
Transmission fluid temperature gauge, with warning light and buzzer
Two air pressure gauges, with warning light and buzzer
Voltmeter, with low voltage warning light and buzzer
Fuel level gauge

High beam indicator light
Parking brake set light
Turn signal indicator lights

The lighting control panel is to be located to the left side of the instrument panel. This panel shall have a black textured anti-glare surface. The lighting control panel shall include the following:

Headlight control switch
Dash rheostat for instrumentation lighting control
Wiper and washer control switches

The engine control panel is to be located beneath the instrument panel on the driver's right hand side. The panel shall have a black textured anti-glare surface. The engine control panel shall include the following:

Keyless ignition switch with a green pilot light

The apparatus control panel is located beneath the instrument panel on the driver's left hand side. The panel shall have a black textured anti-glare surface. The apparatus control panel is designed for the location of pump shift controls.

AUDIBLE TURN SIGNAL REMINDER

There shall be an audible alarm that shall sound when the turn signal remains flashing for a distance greater than one mile. The reminder shall not sound when the hazard lights are operating.

There shall be an audible alarm that shall sound when the headlight switch is left in the on position and the ignition is off. The alarm shall self cancel after 2 minutes of operation.

There shall be an audible alarm that shall sound when the parking brakes are NOT set and the ignition is turned off. This alarm shall self cancel after 2 minutes.

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The Parking Brake reminder shall sound an audible alarm when the parking brakes are set and an indicated speed of over two miles per hour occurs.

DUAL TRIP ODMETERS

There shall be two (2) trip odometers in the driver's information center. Each shall be capable of independent operation and reset. They shall be labeled Trip1 and Trip2 when the trip mileage is shown in the LCD panel.

SPEEDOMETER ACTIVATED IN PUMP MODE

The speedometer and odometer shall be activated while in pumping mode.

LOW FUEL LIGHT

A "Low Fuel" warning light and alarm shall be installed in the dash message center. This light shall illuminate when the apparatus fuel level reaches 25% of the fuel remaining.

TRANSMISSION OVERHEAT WARNING LIGHT

A transmission oil temperature light with alarm shall be provided on the dash message center.

LOW VOLTAGE WARNING

A low voltage indicator light shall be installed on the dash message center. An alarm and the dash indicator light shall activate when the system voltage drops below 11.8 volts.

AIR CLEANER RESTRICTION INDICATOR

An air cleaner restriction indicator shall be installed in the driver's message center. The indicator shall provide visual warning when a high air restriction condition exists for a minimum of 4 seconds.

LOW COOLANT WARNING

Low coolant warning shall be accomplished through the engine electronics to provide driver warning via the engine stop warning light.

CONTROL CENTER

Mounted on the doghouse there shall be a black ABS driver / officer control center. This area shall include various controls and functions that must be available to the driver and officer. On the top of the control center there shall be an access panel for maintenance and troubleshooting of devices mounted on the control center.

The apparatus warning light switch panel shall be mounted on the control center immediately to right of the driver.

The apparatus parking brake control valve shall be located on the doghouse mounted control center. The parking brake control valve shall be able to be controlled by the officer in the event of an emergency.

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SWITCH PANEL

The switch panel shall be a Class 1 Smart Programmable Switch (SPS) panel installed as a multiplexed node to provide input and output information to the apparatus electrical system. The panel shall have ergonomic rubber molded rocker type switches with backlighting.

The panel shall include one (1) function as a master control switch to allow for pre-selection of response mode functions. The remaining switches shall be programmed and labeled with the manufacturer standards as to the custom options selected for the vehicle.

ELECTRICAL SYSTEM

The apparatus shall be hard wired or equipped with a Class 1 ES-Key Management System or equivalent multiplex system for the complete control of the electrical system devices. This management system shall be capable of performing load management functions, system monitoring and reporting, and be fully programmable for control of the electrical system.

The ES-Key system shall utilize a Controller Area Network (CAN) to provide multiplexed control signals for "real time" operation. The system shall consist of the following components:

- *Universal System Manager (USM)* - The USM device shall be the CAN network controller and provide various functions to the apparatus such as load management. The USM shall be programmed from a network interface to a PC computer.
- *Power Distribution Module(s) (PDM)* - The PDM shall be a control device on the network with a primary function as power distribution. Receiving control signals from the USM the PDM turns on and off relays providing power to its connected loads. The PDM also shall contain digital switch inputs allowing for input clustering throughout the apparatus.
- *Information Display Module* - for displaying text, warnings and diagnostics. The information Display Module shall allow the fire department to access and change load management shedding priority and maintenance text listing the routine maintenance items and lubrication capacities on the apparatus.
- *Input / Output Module* - The module shall have 16 inputs to communicate with the USM and 3 outputs for various chassis functions.

The system shall provide diagnostic capabilities for troubleshooting the electrical system of the apparatus.

CHASSIS COLOR CODED WIRING

All chassis wiring shall be type "GXL" in accordance with S.A.E. J1128 and NFPA-1901. ALL wiring shall be COLOR CODED and continuously marked with the circuit number and function.

All wiring to be covered in nylon heat resistant "HTZL" loom rated at a minimum of 300 degrees F exceeding the heat requirements of NFPA-1901.

A battery "loop back" ground circuit shall be supplied for the EDS system to reduce the possible effects of Electromagnetic and Radio Frequency Interference.

The chassis cab, engine and transmission shall be electrically bonded to the chassis frame rails with braided ground straps.

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ELECTRICAL SYSTEM CONNECTORS

All multiple conductor electrical connections shall be made with Packard electrical connectors. The Packard connectors shall become mechanically locked when mated.

All single wire terminations requiring special connectors with a ring or spade terminal shall be crimped, and wrapped with heat shrink tubing.

FIRE COM INTERCOM SYSTEM

There shall be a Fire Com intercom system installed in the chassis cab. The intercom system shall be installed and have all wiring and components to render the system operational as follows:

One (1) 3020R series intercom system features:
- For use with two radios
- Voice-activated circuitry (VOX)
- Continuous mobile radio monitoring
- Independent controls allow quick adjustment of volume and squelch
- Durable steel housing protects against heat, moisture, and damage from impact

Other installed components include:

DRIVER'S POSITION

The following headset shall be installed adjacent to the driver's seating position in the cab.

One (1) Fire Com UH-10 headset(s) shall be provided. Each headset shall have a noise-canceling electret microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort. The microphone boom rotates 180° to allow headset operation with right or left hand

Secure Red PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will activate the radio as a transmit.

One (1) Fire Com Headset plug-in modules for interior mounting in apparatus. Single plug.

One (1) cable will be required for the headset installation.

OFFICER'S POSITION

The following headset shall be installed adjacent to the officer's seating position in the cab.

One (1) Fire Com UH-20 headset(s) shall be provided. Each headset shall have a noise-canceling electret microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort. The microphone boom rotates 180° to allow headset operation with right or left hand

Secure Black PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will activate the radio as a transmit.

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One (1) Fire Com Headset plug-in modules for interior mounting in apparatus. Single plug.

One (1) cable will be required for the headset installation.

CREW INTERCOM

The headset(s) shall be installed adjacent to the crew seating positions in the cab.

Two (2) Fire Com UH-20 headsets shall be provided, one each seat. Each headset shall have a noise-canceling electret microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort. The microphone boom rotates 180° to allow headset operation with right or left hand

Secure Black PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will NOT activate the radio as a transmit.

Appropriate for crew positions.

Two (2) Fire Com Headset plug-in modules for interior mounting in apparatus. Single plug.

Two (2) cables will be required for the headset installation.

WIRELESS INTERCOM HEADSETS

Two (2) FireCom wireless headsets shall be furnished, One for pump operator and one for turntable operator. They shall have minimum range of 100 feet.

Secure Red PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will activate the radio as a transmit.

RADIO INTERFACE

A radio interface cable will be provided for the following radio:

The intercom control shall be mounted on top of the engine doghouse within reach of the driver and officer.

RADIO ANTENNA MOUNTS

Two (2) NMO mount shall be roof mounted, on the officer's side of the cab.

The antenna mount shall be located 34 inches from the front face of the cab and 18 inches from the cab side.

The unterminated coax is to be routed in the cab to the radio power circuit termination.

The antenna wiring shall terminate in the center of the cab on top of the engine enclosure.

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12VDC TRIPLE POWER POINT

A triple outlet 12 volt, socket (cigarette lighter) type, receptacle shall be provided.

The power point shall be wired to switched battery power with the appropriate wire size and fuse.

The power point socket shall be provided, centered on the front area of the engine doghouse for use by the driver and/or officer.

12VDC POWER CIRCUIT

A circuit protected 30 amp battery "hot" circuit, a circuit protected 30 amp battery switched circuit, and a ground circuit with the proper wire size to handle the current shall be provided. These circuits are provided for two-way radio and/or accessory wiring.

The radio / accessory power circuit shall terminate in the center of the cab on top of the engine doghouse.

HANDHELD SPOTLIGHT

An Optronics KB-4003 400,000 candlepower hand held spotlight shall be hard wired into the cab electrical system and mounted convenient for the officer's use.

ROAD SAFETY KIT

One (1) 2-1/2# ABC DOT Approved fire extinguisher shall be provided. The fire extinguisher shall be shipped loose with the chassis.

One (1) set of DOT approved hazard triangles shall be supplied with the chassis. They shall be stored in a plastic case and shipped loose with the chassis.

EXTERIOR GRAB HANDLES

The cab shall have a bright anodized extruded aluminum 24" grab handles at each door position. The aluminum shall be bright anodized for long service. Molded rubber gaskets shall be installed under the grab handles to protect the painted surface of the cab.

FRONT GRILLE

A stainless steel front grille shall be installed on the front cab face. The front grille shall have a radiator rock guard to assist in preventing damage to the radiator core.

The cab shall have one (1) engine "hot" air exhaust and one (1) engine air cleaner intake, on each side of the cab. These openings shall be covered with a honey comb wire screen and shall have a bright polished stainless steel outer grille.

CAB MUDFLAPS

Mud flaps shall be installed behind the front tires. These mud flaps shall be a minimum of 22" wide to protect the underneath of the cab and body.

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CAB GROUND LIGHTING

One (1) light shall be mounted beneath each door. These lights shall be designed to provide illumination on areas under the driver and crew riding area exits. All cab ground lights shall switchable and shall automatically activate when any cab exit door is opened.

MIRRORS

16 1/2" X 7" stainless steel heated, remote control mirror heads shall be mounted on spring loaded retractable mirror arms. Includes a 5-1/2" x 8.5" convex mirror head.

UNDER CAB ENGINE MAINTENANCE LIGHTS

Two (2) engine maintenance lights shall be supplied beneath the cab. These lights shall illuminate automatically when the cab is tilted to the full tilt position.

WHEEL WELL LINERS

To reduce road splash and allow for easy cleaning, bolt in front wheel well liners are to be installed. Stainless steel material is to be used for the liner for ease of cleaning and eliminate corrosive action created by road debris. The wheel well liners are to be a minimum of 22 inches in width.

STAINLESS CAB FENDERETTES

To reduce road splash on the cab sides, polished stainless steel fenderettes shall be installed around each the wheel opening.

EXTERIOR REAR WALL DIAMOND PLATE OVERLAY

The cab exterior rear wall shall be covered with a single sheet of bright aluminum tread plate to protect the back of the cab from scratches.

CAB TILT SYSTEM

The cab shall tilt a minimum of 45 degrees for ease of serving. Tilting shall be accomplished by means of a tilt pump connected to two (2) heavy duty lift cylinders. It shall be equipped with a positive locking mechanism (service lock) to hold the cab in the full tilt position. Release of the service lock shall be by means of a pull type cable assembly. The cylinders shall have a velocity fuse at the base to prevent the cab from falling in the event of a hydraulic hose failure. The cab shall be capable of tilting 90 degrees for major engine service, if necessary. The 90 degree cab tilt shall be accomplished by removing the cab cylinder pins, removing one bolt in the steering shaft, and removing the front bumper and treadplate.

The cab shall have a three (3) point cab locking system. To prevent undue stresses in the cab, the cab mounting shall incorporate a five (5) point load mounting system.

The front cab pivot/lock assemblies shall utilize four (4) radially loaded, bonded rubber, axial mounts. These mounts shall have a maximum radial load rating of 925 pounds each and a torsional rating of 25 lbs-in/deg. Two one (1) inch diameter cab pivot pins shall be installed at the front of the cab.

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The rear cab lock shall be center point mounted to prevent normal twist of the chassis from affecting the cab mounting, cab structure and windshield areas of the cab. This rear cab lock shall be mounted on a chassis crossmember to provide a stable platform for the locking system. The cab lock shall be mounted to a baseplate that is fastened to rubber isolators to reduce road noise and provide additional movement of the cab lock. This locking system shall automatically open prior to the cab tilting and automatically relatch when the cab is lowered completely into the travel position.

Two (2) outboard frame mounted urethane "V" blocks shall be provided at the rear of the cab. These dual purpose mounts shall align the cab upon lowering as well as provide non-latching support for the cab in the down position. With this system, extreme chassis twist shall allow the cab to move independently of the rear cab supports, reducing the structural stress damage often caused by outboard dual cab locking systems.

An electric-over-hydraulic cab tilt pump shall be supplied. This pump shall have a remote control for cab tilting operation. The control shall be "safety-yellow" in color.

CAB TILT INTERLOCK

The cab lift system shall have a cab tilt interlock. The cab tilt shall not be able to be activated unless the master battery switch is in the on position with the parking brake set.

CAB TILT AERIAL INTERLOCK

A cab tilt interlock shall be installed to prevent the tilting of the cab when the aerial ladder is in a bedded position.

DRIVER'S SEATING POSITION

The seat shall be Bostrom or Seats, Inc. 911, non-suspension, high back seat with a 4" double locking fore and aft slide adjustment.

A red 3-point, shoulder harness type seat belt shall be supplied for the seat.

OFFICER'S SEATING POSITION

The seat shall be Bostrom or Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest. The seat shall contain a SCBA filler pad for when the bottle is not in use.

A red 3-point, shoulder harness type seat belt shall be supplied for the seat.

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, or Bostrom equivalent (SCBA) self-contained breathing apparatus brackets mounted in the cab. The WALKAWAY brackets shall included a QLM-U-USM pull release mounted beneath the seat cushion in the center of the seat cushion.

CREW AREA - REAR FACING LEFT OUTBOARD SEAT POSITION

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest.

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A red lap type, metal to metal quick release seat belt, with automatic seat belt retractor shall be provided for the seat.

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, or Bostrom equivalent (SCBA) self-contained breathing apparatus brackets mounted in the cab. The WALKAWAY brackets shall included a QLM-U-USM pull release mounted beneath the seat cushion in the center of the seat cushion.

CREW AREA - REAR FACING RIGHT OUTBOARD SEAT POSITION

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest.

A red lap type, metal to metal quick release seat belt, with automatic seat belt retractor shall be provided for the seat.

WALKAWAY BRACKET

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, or Bostrom equivalent (SCBA) self-contained breathing apparatus brackets mounted in the cab. The WALKAWAY brackets shall included a QLM-U-USM pull release mounted beneath the seat cushion in the center of the seat cushion.

IMPERIAL 1200 MATERIAL

The chassis seats shall have Imperial 1200, durable polyester, material in lieu of the standard vinyl. The seats shall have the Imperial 1200 material in the following applicable areas.

- Seat Base Top
- Seat Base Sides
- Seat Back Support Face
- Seat Back Support Sides
- Seat Headrests

SEAT BELT WARNING LABELS

The cab shall be equipped with two (2) seat belt warning labels. These labels are to be in full view of the occupants in the seated position.

VEHICLE DATA RECORDER

Apparatus shall be equipped with a Class1 “Vehicle Data Recorder and Seat Belt Warning System” (VDR/SBW), or equal, that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and antilock brake (ABS) modules mounted on the apparatus. The VDR/SBW will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train’s J1939 data and 14.1.3.10 (Seat Belt Warning) using the Class1 “Seat Belt Input Module” for seat occupied and belt status information.

The VDR data shall be downloadable by USB cable to a computer using either Microsoft™ or Apple™ Operating Systems using Class 1/ O.E.M. supplied reporting software.

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SEAT BELT WARNING SYSTEM

There shall be a seat belt indicator system supplied in the cab. The indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

A display panel shall be supplied in the dash area. The panel shall have an audible indicators and a red light display to indicate that a seat belt has not been fastened.

SEAT BELT WARNING SYSTEM - MONITOR

Mounted in the overhead console in the driver's area the indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

EMS STORAGE CABINET

A storage compartment, full height x 40" W x 20" D shall be provided on the rear wall with the door opening facing the front of the cab.

The cabinet shall be bolted construction made of 304 stainless steel and with a brushed finish.

The EMS Cabinet shall be installed on centered on the rear wall.

The EMS cabinet shall be provided with a Gortite, or equal, roll up door facing forward. The roll up door shall be constructed of double sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1-3/8" wide x 3/8" thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slat to insure a weather tight seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end.

A vertically hinged door shall be furnished on each end so medical bag, etc could be removed without climbing into the cab.

Side channels for each door to ride in shall be provided with santoprene seals to prevent dirt and moisture from entering the exterior compartment. A single piece top drip rail shall be provided with a santoprene seal to prevent dirt and moisture from entering the compartment when the door is fully closed. The bottom of each door shall also be provided with a santoprene seal. All nonmetallic parts shall be glass filled nylon.

The door latches shall be keyed locking stainless steel lift bars and shall be provided with a magnetic door switch system. One key to fit all doors.

EMS CABINET LIGHTING

Two (2) LED strip lights shall be provided mounted inside the cabinet, one (1) on each side of the roll up door. These lights shall be controlled by the door switch for illumination.

ALUMINUM SHELVES - ADJUSTABLE - EMS CABINET

Three (3) adjustable aluminum shelves shall be installed and shall have a flange 1-1/2" deep and a minimum

material thickness of .190" up to 30" in length. Each shelf shall be fully adjustable in height and held in place by extruded uprights.

110 VOLT RECEPTACLE

One (1) 120-volt AC, single receptacle shall be provided with a weatherproof cover centered in the upper portion of the EMS cabinet. This receptacle shall be wired to the shoreline connection for charging devices stored in the EMS cabinet.

The electrical outlet shall be a NEMA 5-15, rated at 120-volt AC, 15-amp, duplex straight blade receptacle.

AIR HORNS

Dual stutter tone air horns shall be recessed into the front bumper, one each side.

To eliminate inadvertent operation the chassis air horns shall be operable only when the battery selector and ignition switch are in the "ON" position.

One (1) foot switch for the air horns shall be provided on the left side of the driver's side cab floor and one (1) on the right side of the officer's side cab floor.

HORN / ELECTRONIC SIREN ELECTOR SWITCH

The air horn and the electric horn are sounded simultaneously by depressing the horn button in the steering wheel.

A switch shall be supplied for the driver to control either the electric and air horns or the electronic siren from the steering wheel horn button. This switch shall be clearly labeled with a back-lit legend.

ELECTRONIC SIREN

A Federal Signal 100 watt electronic siren control with microphone, model #PA300, shall be provided.

The siren control shall be recess mounted in the cab ceiling console, within reach of the driver and officer.

SIREN SPEAKERS

There shall be two (2) Cast Products polished aluminum 100 watt speakers provided. The speakers shall be recessed into the front bumper, one each side, immediately outboard of the chassis frame rails.

Q2B MECHANICAL SIREN

A Federal Q2B siren shall be mounted recessed in the cab front grille or on the front bumper extension.

To eliminate inadvertent operation the Q2B shall be operable only when the Master Warning Light switch is in the "ON" position.

A momentary rocker switch shall be provided in the driver's switch panel for operation of the siren brake. This switch shall be backlit with the legend "SIREN BRAKE".

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One (1) foot switch for the siren shall be provided on the left side of the driver's side cab floor and one (1) on the right side of the officer's side cab floor.

GENERATOR

An Onan model 10.0RBAA, 10 KW hydraulic generator system shall be supplied and installed on the apparatus. The generator system shall be capable of producing 10 KW, single phase, 120/240-volts at 60 hertz regardless of engine RPM. The generator shall be able to remotely turn the system's full KW off and on without regard to engine RPM or electrical loads by the use of multiple 12-VDC switches.

The generator shall be equipped with an automatic voltage regulator to maintain nominal output voltage (120/240-volts AC) under varying generator loads. An integral oil to air heat exchanger shall cool the hydraulic fluid before being returned to the reservoir.

A hydraulic pump shall power the generator motor and is driven by a power takeoff on the vehicle transmission. The pump shall maintain a constant flow, and nominal generator frequency (60 Hz).
The hydraulic fluid reservoir shall have a three gallon capacity and shall be equipped with a full flow 6 micron oil filter, oil level sight glass, filter pressure cap, breather filter, and oil fill cap. The generator system shall use Dextron III hydraulic fluid.

The generator display module shall display generator output voltage, frequency and current. The module shall also display the temperature of the hydraulic fluid returning to the fluid reservoir and the number of hours run (hour meter). The display module shall be located in the L1 compartment adjacent to the apparatus load center. The load center shall be connected to the generator system. A generator on/off switch shall be located in the cab in a location convenient to the driver.

The generator unit shall be mounted in the dunnage area of the pump compartment.

POWER TAKE OFF

A "Hot Shift" PTO unit shall be provided and installed. A switch to control the operation of the PTO shall be installed in the cab in a location convenient to the driver.

120/240-VOLT AC NFPA LOAD TEST

Electrical System Testing.
The wiring and associated equipment shall be tested by the apparatus manufacturer or the installer of the line voltage system.

The wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for 1 minute. The test shall be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test shall be conducted after all body work has been completed. The dielectric tester shall have a 500 volt-amperes (VA) or larger transformer, with a sinusoidal output voltage that can be verified.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles in order to determine that connections have been properly made.

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Operational Test
The apparatus manufacturer shall perform the following operational test and shall certify that the power source and any devices that are attached to the line voltage electrical systems are properly connected and in working order.

The prime mover shall be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating.

The following information shall be recorded:
(1) The cranking time until the prime mover starts and runs, if applicable
(2) The voltage, frequency, and amperes at continuous full rated load
(3) The prime mover oil pressure, water temperature, transmission temperature, hydraulic temperature, and the battery charge rate, as applicable
(4) The ambient temperature and altitude

The power source shall be operated by the apparatus manufacturer at 100 percent of the systems continuous rated wattage as specified on the Power Source Specification Label for a minimum of 2 hours. Testing with a resistive load bank shall be permitted. The conditions specified in 21-14.4.1(2) and (3) shall be recorded at least every 1/2 hour during the test.

If the apparatus is equipped with a fire pump, this 2-hour test shall be completed with the fire pump pumping at 100 percent capacity at 150-psi (1035 kPa) net pump pressure. The 2-hour test shall be permitted to be run concurrently with the pump certification test required in 14-13.1.

Where the line voltage power is derived from the vehicles low-voltage system, the minimum continuous electrical load as defined in Chapter 11 shall be applied to the low-voltage electrical system during the operational test. Any termination of line voltage power by the low-voltage load management system shall be noted, and the duration of the periods of line voltage power source shutdown shall be recorded.

Vehicle support systems that are required to maintain the power source in operation shall remain within their required operational parameters.

The results of the tests listed in this section shall be supplied to the purchaser at the time of delivery.

LOAD CENTER PANEL

A Square D Homeline circuit breaker panel shall be provided in the apparatus body. All breakers shall be properly labeled. The generator shall be hard wired to the circuit breaker panel. The circuit breaker panel shall be mounted so as to not interfere with shelves or trays, if specified. The load center panel cover shall be accessible with hand tools.

Manual reset 120-volt AC circuit breakers shall be provided in the load center as required by the circuits installed by the apparatus manufacturer.

Manual reset 240-volt AC circuit breakers shall be provided in the load center as required by the circuits installed by the apparatus manufacturer.

The load center panel mounting location shall be in the L1 compartment.

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WEATHER RESISTANT TUBING

The AC wiring in the apparatus body shall be installed in seal tite weather resistant conduit.

FORWARD FACING BROW LIGHT

One (1) brow light shall be provided and mounted centered on the leading edge of the cab roof facing forward.

There shall be One (1) Fire Research Focus FCA800 Series roof mount lamp head(s) provided. The mounting bracket shall attach to the light head chosen for the mounting position. Wiring shall exit from a weatherproof strain relief on the lamp head.

The lamp head shall have one (1) quartz halogen 750 watt 120 volt bulb. The bulb will draw 6.3 amps and generate 19,600 lumens. The bulb shall be accessible through the front. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head shall incorporate heat-dissipating fins and be no more than 5" deep by 3 3/8" high by 10" wide. Lamp head and mounting arm shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

The brow light shall have a white housing

One (1) 12-volt, switch shall be wired through 120-volt relay and shall be located in the cab switch panel for the apparatus body quartz light(s) as selected.

FRONT BODY QUARTZ LIGHTS

The following light shall be provided mounted on the left and right front corners of the body:

Fire Research Focus model FCA100-M15 lamp head shall be provided. The lamp head mounting arm shall terminate in 3/4" NPT threads. Wiring shall extend from the lamp head mounting arm bottom.

The lamp head shall have one (1) quartz halogen 1500 watt 240 volt bulb. The bulb will draw 6.25 amps and generate 35,000 lumens. The bulb shall be accessible through the front. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall incorporate heat-dissipating fins and be no more than 5 1/4" deep by 3 3/8" high by 15" wide. Lamp head and mounting arm shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

Two (2) 12-volt, water proof switches shall be wired through a 240-volt relays and shall be located on the pump operator's panel. The switches shall control a 240 volt quartz lighting fixtures as selected.

The light head shall be mounted on a side mount push up telescopic pole. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 3 1/2" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

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ELECTRIC CORD REEL

One (1) Hannay model ECR1616-17-18 electric rewind cord reel(s) shall be supplied and installed.
The cable reel(s) shall be a 12-volt electric rewind type.

One hundred fifty feet (150') of 10/4 SO (black) cord shall be installed on one (1) reel(s), complete with an HS-3 ball stop.

One (1) Akron junction box, model EJB shall be provided. The junction box is to be powder coated safety yellow and be provided with rubber feet on the bottom of the box.

One (1) Akron yellow powder coated mounting bracket, model EJB-VMT is to be shipped loose with the apparatus for final installation by the department.

There shall be four (4) L5-20 125 Volt AC twist lock outlet with spring loaded cover.

CAPTIVE ROLLERS

There shall be a captive roller system furnished for the cord reel. The roller mounting brackets shall be attached to guide the cord on and off the reel assembly.

REEL REWIND SWITCH

The cord reel shall be equipped with a weather resistant push button switch mounted in the relay enclosure box within compartment that the reel is contained.

PUMP COMPARTMENT

The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. It shall be a fabricated assembly of stainless steel tubing, angles and channels, which does not support the fire pump and or running boards. The pump compartment shall be mounted onto the chassis through rubber biscuits in a four point pattern to allow for a chassis frame twist.

Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly. The pump compartment shall be a modular design.

A stainless steel framework shall provide the support for the mounting of the pump lower panels. Stainless steel structure shall be provided as a support behind all control push-pull handles enabling a firm foundation for operation of the valve control.

An upper framework shall encompass the crosslay hose bed and walk way area for operation of the deck gun. The floor of this section shall be a bolt-on design to provide access for major repairs and or service.

RUNNING BOARDS

The running boards shall be separate from the hose body, compartments, and pump compartment so that each may flex independently of the other and to allow water to flow freely away from the running board area. Separation of the running boards and support structure from the hose body, compartments and pump compartment is desired to provide field service of the running board without major repairs to the pump compartment in the event of an accident.

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The steel running board supports shall be bolted directly to the chassis frame rails to provide proper support. The running board step surface shall be covered in aluminum treadplate meeting the current revision of NFPA 1901 for step requirements.

RUNNING BOARD HOSEWELL

The left and right running board shall be provided with an integral smooth plate hose well with a 1.5 cubic feet capacity.

Two (2) straps shall be provided for the running board hosewell to secure hose in the hosewell.

DUNNAGE COMPARTMENT OVER PUMP

There shall be a dunnage compartment furnished on top of the pump module. The floor shall be bolted in place and removable for access to the fire pump components for major service.

Two (2) bright anodized extruded aluminum grab rails shall be provided, one (1) each side of the pump house on the side of the dunnage compartment just below the top edge mounted horizontal to provide easy access to the dunnage compartment. Molded rubber gaskets shall be installed under the grab handles to protect the surface of the compartment.

The dunnage area of the pump house shall have approximate dimensions of 68" wide x 19" deep x 43" front to back.

PUMP COMPARTMENT WORK LIGHT

The pump compartment shall have one (1) Truck Lite, model 40 clear work light to provide illumination of the pump compartment. The light shall have a weather resistant, toggle style on/off switch located inside the pump compartment adjacent to the left service door area. The power for the pump module light shall be switched thru the battery master switch.

PUMP SERVICE ACCESS REQUIREMENTS

It is the opinion that service access to the pump, valves, gauges and controls are of the utmost importance. Special consideration shall be taken when evaluating the pump module design of the offerer. Pump panels that offer little to no access without the use of tools shall not be considered compliant with this requirement.

PUMP CONTROL PANELS

All pump controls and gauges shall be located at the left (street) side of the apparatus and properly identified. The layout of the pump control panel shall be ergonomically efficient and systematically organized. The pump operator's panel shall be removable in two (2) main sections for ease of maintenance. The pump and gauge panels shall be constructed of 12-gauge stainless steel. The gauge panel shall contain a panel for mounting of all instruments, engine monitoring system, and pressure control system.

The gauge panel shall be a double panel door design to protect in the enclosed door all gauge tubing, switch, and control wiring. The gauge panel exterior shall be made of 12-gauge stainless steel. The inner pan shall bolt onto the stainless exterior panel. There shall be an access panel in the inner panel easily removable for control or gauge service or replacement.

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The gauge panel door shall be designed as an opening pump house service door on the street (left) side of the pump house. This gauge panel door shall provide an opening minimum size of 41 inches wide by 14 inches in height.

The lower section of the panel shall contain all inlets, outlets, and drains. All push-pull valve controls shall have quarter turn locking control rods with chrome plated zinc tee handles. Guides for the push-pull control rods shall be chrome plated zinc castings securely mounted to the pump panel. Push-pull valve controls shall be capable of locking in any position. The control rods shall pull straight out of the panel and shall be equipped with universal joints to eliminate binding.

There shall be an opening pump house service door on the curb (right) side of the pump house. This door shall provide an opening minimum size of 41 inches wide by 14 inches in height.

PUMP PANEL IDENTIFICATION TAGS

The identification tag for each valve shall be recessed in the face of the control handle. All discharges shall have color-coded plastic identification tags, with each discharge having its own unique color. Color-coding shall include the labeling of the outlet and the drain for each corresponding discharge.

PUMP PANEL FINISH

All stainless panels used in the construction of the pump house shall have a brushed finish.

CONTROLS AND GAUGES

The following shall be provided on the pump and gauge panels in a neat and orderly fashion. The gauge panel shall include the following:

ENFO-III ENGINE MESSAGE CENTER

The apparatus shall be equipped with the Class1 ENFO III Engine Information Display for the pump panel. The ENFO III shall provide engine RPM, system voltage display and alarm, engine oil pressure display and alarm, and engine temperature display and alarm. The ENFO III uses the SAE J-1587 data bus for its information and does not require any additional sensors to be mounted. The message center shall provide the following:

Engine Oil Pressure: With visual LED message and audible warning.

Engine Water Temperature: With visual LED message and audible warning.

Voltmeter: With visual LED message and audible warning.

Tachometer: With visual LED message.

CLASS 1 PRESSURE GOVERNOR - ELECTRONIC ENGINE CONTROL

An electronic control for engine speed based upon a preselect for "RPM" or pump "Pressure". The electronic control for the engine is to operate as a pressure sensor (regulating) governor (PSG) eliminating any need for a relief valve on the discharge side of the pump. The control shall have the following controls and display:

Mode select button for "RPM" or pump "Pressure"
Green light to indicate when "RPM" mode is selected.

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Green light to indicate when "Pressure" mode is selected.
Idle select button to immediately return the engine to idle, regardless of mode of operation.
Preset button to increase the engine speed or pump pressure to a preset condition.
Increase button to increase engine speed or pump pressure based upon mode selected.
Decrease button to decrease engine speed (RPM) or pump pressure based upon mode selected.
Green "Pump Engaged" light
Green "Okay to Pump" light
Green "Throttle Ready" light
Visual LED Message Center to provide engine speed (RPM) or pump pressure based upon mode selected.

MASTER GAUGES

The pump master vacuum and pressure gauges shall be 4-1/2" in diameter with white dial face gauges with black lettering and markings.

The master vacuum gauge shall be a compound style gauge with a vacuum/pressure range of -30" - 0 - 400 psig with the dial face of the gauge labeled in black INTAKE.

The master pressure gauge shall be provided with a range of 0-400 psig and the dial face of the gauge labeled in black DISCHARGE.

The gauge accuracy for the gauge shall be plus or minus 1% of full scale per ANSI B40.1, Grade 1A.

A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

MASTER GAUGE TEST PORTS

Adjacent to each gauge there shall be a pressure tap to provide simultaneous reading of the vacuum and pressure exerted on the individual gauge.

PRESSURE GAUGES

Each line pressure gauge shall be mounted immediately above the control for the corresponding valve. The individual line *pres*sure gauges for the discharges shall be 2-1/2" in diameter with white dial face gauges with black lettering and markings. The gauges shall be a compound style gauge with a vacuum/pressure range of 0 - 400 psig.

The gauge accuracy for the gauge shall be plus or minus 2% mid-scale, plus or minus 3% balance, per ANSI B40.1, Grade 1A.

A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

All line pressure gauges shall be mounted adjacent to the corresponding discharge control tee handles.

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PUMP OPERATION HOURMETER

A pump hourmeter shall be supplied. The hourmeter shall be environmentally sealed to prevent moisture from entering the instrument. The face shall provide a display of the total cumulative hours of pump engagement. The hourmeter shall be protected by being located inside the pump module.

PUMP PANEL LIGHTING

The pump operator's panel shall be supplied with a LED light system. LED strip lights with a stainless steel hood shall be mounted across the top of the pump panel gauges and controls.

LED strip lights with a stainless steel hood shall be provided on each side of the pump module above the side panels.

All pump module lighting shall illuminate when the parking brake is engaged.

DRAIN DISCHARGES

The 3/4 inch drain valves shall be equipped with 90-degree fittings to direct the discharge water beneath the pump module away from the pump operator's panel.

AIR HORN ACTIVATION SWITCH

A switch shall be located on the pump panel to activate the chassis air horn. The switch shall be a momentary pushbutton type switch with a red cover. The switch shall be supplied with the proper identification label.

WATER TANK LEVEL GAUGE

The apparatus shall be equipped with a Class 1 "Inteli-Tank" Tank Level Gauge, or equal, for indicating water level. The tank level gauge shall indicate the liquid level on an easy to read LED display and show increments of 1/8 tank capacities. The tank level gauge system shall include a pressure transducer that shall be mounted on the outside of the tank in an easily accessible area, a super bright LED four-light display with a visual indication at nine (9) accurate levels, and a set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power.

FOAM TANK LEVEL GAUGE

The apparatus shall be equipped with a Class 1 "Inteli-Tank" foam tank level gauge for indicating foam level. The foam tank level gauge shall indicate the foam concentrate level on an easy to read LED display and show increments of 1/8 tank capacity. The foam tank level gauge system shall include:

A pressure transducer that shall be mounted on the outside of the tank in an easily accessible area. A super bright LED four-light display with a visual indication at nine accurate levels. A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power.

PUMP MANUFACTURER AND MODEL

The pump shall be a Hale Q-MAX model midship pump 2,000 gpm single stage.

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PUMP RATING AND TEST REQUIREMENTS

The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 2000 gallons per minute (U.S. GPM), NFPA 1901 rated performance. The pump shall deliver the percentage of rated discharge at pressures indicated below:

100 percent of rated capacity at 150 pounds net pressure
70 percent of rated capacity at 200 pounds net pressure
50 percent of rated capacity at 250 pounds net pressure
100 percent of rated capacity at 165 pounds net pressure

The entire pump shall be assembled and tested at the pump manufacturer's factory. The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

PUMP COOLING LINE

A 3/8" cooling line shall be installed to recirculate water from the pump back through the pump transfer case, to cool the pump during prolonged pumping operations. The cooling line shall be controlled at the operator's position with a Class 1 valve.

AIR PRIMER

The pump shall be furnished with an air driven venturi priming system. The system shall be plumbed to the chassis air. A switch to control the air primer shall be provided on the pump operator's panel.

PNEUMATIC PUMP SHIFT

The pump shift shall be air operated and shall incorporate an air double action piston to shift from road to pump and back. A manual or electric operated pump shift mechanism is not acceptable. The pump shift switch shall be mounted in the cab and identified as "AIR PUMP SHIFT" and include instructions permanently inscribed on the pump shift switch plate. The in-cab operating valve uses a spring loaded locking collar to prevent it from accidentally being moved.

The pump shift control assembly shall incorporate an indicating light system, which will notify the operator when the shift has been completed to PUMP and when the chassis transmission is in correct pumping gear.

The switch that activates the lights must be mounted on the pump transmission and positioned so that the pump shift arm activates the switch only when the shift arm has completed its full travel into PUMP position. An additional indicator light shall be provided adjacent to the throttle control at the pump operator's panel to indicate a completion of the pump shift.

MECHANICAL SEAL

The fire pump shall be provided with a mechanical pump seal. One (1) only required on the suction, inboard, side of the pump. The mechanical seal shall be two inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber boot, and a tungsten carbide seat with Teflon backup seal.

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ANODE SYSTEM

To reduce the effect of galvanic action the pump shall be equipped with two zinc (2) anodes. One anode is to be installed on the inlet (suction) side of the system and one anode is to be installed on the pressure (outlet) side of the system.

THERMAL PROTECTION

The pump shall be equipped with a Hale TRV-L, thermal protection device, which monitors the water temperature of the pump and relieves water when the temperature inside the pump exceeds the preset value of the relief valve (120 degrees F / 49 degrees C).

The TRV shall automatically dump a controlled amount of water to the atmosphere or back to the tank when the pump water temperature exceeds the preset value. The valve shall automatically close when the water temperature cools to below the preset value.

A chrome panel placard with a visual warning lamp and test button shall be provided on the operator's panel. The warning light shall illuminate when the Thermal Relief Valve is open and discharging water.

MASTER DRAIN

The apparatus shall be equipped with a Class 1 Manual Master Pump Drain for draining of the lower pump cavities, volute and selected water-carrying lines and accessories. The all brass and stainless steel construction allows for operation up to 600 psi.

PUMP CERTIFICATION TEST

The apparatus shall be certified to the requirements of NFPA 1901 prior to delivery of the completed apparatus. The certificate shall be furnished with the apparatus on delivery.

PUMP MANUALS

Two (2) sets of fire pump service and operation manuals shall be provided with the completed apparatus.

LEFT SIDE STEAMER INLET

There shall be one (1) steamer inlet furnished on the left side pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

A six (6) inch chrome plated cap with long handles shall be supplied. The cap shall be capable of withstanding 500 PSI.

RIGHT SIDE STEAMER INLET

There shall be one (1) steamer inlet furnished on the right side pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

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HALE MIV VALVE - RIGHT SIDE

There shall be a full flow Hale MIV-M valve furnished on the right side pump panel. The gate valve shall have a manually operated hand wheel control on the valve. The inlet valve shall be a full flow butterfly type valve designed to mount on the fire pump between the suction extension and suction tube behind the pump compartment panel. The valve shall not interfere with other suction or discharge openings on the fire pump or with pump operating controls when properly mounted.

STORZ ADAPTER

One (1) 6" NST Female swivel thread with long handle 30-degree down to 5" Storz hard coated aluminum adapter shall be provided.

One (1) 5" Storz cap and chain with a suction gasket shall be provided.

LEFT SIDE INTAKE

There shall be an intake located on the left (street) side rear of the pump and shall contain:

A 2-1/2" intake shall be provided. The inlet shall have a 2-1/2" quarter-turn swing-out valve. The inlet shall be provided with a 2-1/2" NST female swivel that extends through the pump panel.

The inlet valve shall have a push-pull type control handle located adjacent to the valve.

One (1) 2-1/2" chrome plated rocker lug plug with chain shall be supplied (ref. Class1 107666).

SUCTION PRESSURE RELIEF VALVE

A, 2-1/2" NPT, relief valve shall be installed on the suction side of the pump and be preset at 125 psig. The relief valve shall have a working range of 50 psig to 200 psig. The valve shall be of stainless steel construction and include a stainless steel spring and rubber seat. The valve shall be normally closed and shall limit pressure in the pumping system. When excessive intake pressures are received, the water shall be directed below the body.

The discharge side of the intake relief valve shall be plumbed to the right side below the running boards, away from but, visible to the pump operator, and shall terminate with an unthreaded pipe. The adjustment control shall be located behind the street side pump panel.

The air bleeder valve shall be mounted on the lower right pump panel drain panel. Air bleeder valve connections shall have a restriction no larger than 3/4" (19 mm) to prevent water hammer when filling hose.

If an intake primer/bleeder selector is selected this valve will not be installed to reduce operator complexity.

DOUBLE SPEEDLAY HOSEBED

The speedlays shall be arranged at the front of the pump module. The #1 speedlay toward the top of the speedlay assembly and the #2 speedlay immediately below the first. The speedlays shall be 12" wide.

The top of the speedlay unit shall have a brushed stainless steel side filler panel that extends from the top of the speedlay unit to the height of the dunnage side panel.

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TOP SPEEDLAY

The top speedlay shall be equipped with a 1-1/2" male NST outlet. The speedlay shall be plumbed with 2" Schedule 40 stainless steel high pressure pipe. A 2" quarter turn ball valve shall be used to control water flow. The outlet shall be equipped with a 2" polished stainless steel 90 degree swivel with 1-1/2" male NST thread located in the hosebed.

This speedlay bed shall be capable of carrying two hundred fifty feet (250') of 1-3/4" double jacketed hose. The speedlay hosebed shall have inside dimensions of 10" wide x 10-1/2" tall x 72" wide.

The bottom speedlay shall be equipped with a 1-1/2" male NST outlet. The speedlay shall be plumbed with 2" Schedule 40 stainless steel high pressure pipe. A 2" quarter turn ball valve shall be used to control water flow. The outlet shall be equipped with a 2" polished stainless steel 90 degree swivel with 1-1/2" male NST thread located in the hose bed.

This speedlay bed shall be capable of carrying two hundred fifty feet (250') of 1-3/4" double jacketed hose. The speedlay hose bed shall have inside dimensions of 10" wide x 10-1/2" tall x 72" wide.

The speedlay valve controls shall be mounted on the operator's panel.

A 1/4 turn drain valve shall be installed for each speedlay. The valve shall be nickel plated with 3/4" NPT female inlet and outlet thread.

Two (2) removable aluminum hose tray(s) shall be provided for the speedlay hose beds.

Poly guides shall be provided at the sides, upper and lower edges of each speedlay opening on both sides of the apparatus body to protect the hose and couplings.

DOUBLE SPEEDLAY HOSEBED WEBBING

Black webbing shall be provided over each side opening of the speedlay hose beds, complete with Quick release fasteners.

LEFT SIDE DISCHARGES

The discharges on the left (street) side of the pump panel shall contain:

Two (2) 2-1/2" discharge shall be provided. The discharge outlet shall have a 2-1/2" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2" NST male threads that extends through the pump panel.

Chrome plated 2-1/2" NSTF to 1-1/2" NSTM rocker lug reducer with cap and chain shall be furnished

RIGHT SIDE DISCHARGES

The discharges on the right (curb) side of the pump panel shall contain:

A 2-1/2" discharge shall be provided. The discharge outlet shall have a 2-1/2" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2" NST male threads that extends through the pump panel.

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One (1) chrome plated, Class 1, 2-1/2" NSTF to 1-1/2" NSTM rocker lug reducer with cap and chain shall be furnished

The second discharge on the right (curb) side of the pump panel shall contain:

A 3" discharge shall be provided. The discharge outlet shall have a 3" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 3" NST male threads that extends through the pump panel.

One (1) 3" NST Female Rigid Rocker to 5" Storz hard coated aluminum adapter shall be provided with a 5" Storz cap and chain with a suction gasket shall be provided.

REAR PRECONNECT - RIGHT SIDE

There shall be one (1) 2-1/2" discharge outlet located on the passenger side rear of the body below the hose bed. The discharge outlet shall be plumbed with 2-1/2" ID, Schedule 40 stainless steel pipe and high pressure hose and have a 2-1/2" quarter-turn, swing out valve with control on pump operator's panel. There shall be a chrome plated 2-1/2" NST adapter that extends through the rear of the body.

BOOSTER HOSE REEL

See front bumper section on page #7

DRAIN DISCHARGES

The 3/4 inch drain valves shall be equipped with 90-degree fittings to direct the discharge water beneath the pump module away from the pump operator's panel.

AKRON BALL VALVES

All ball valves shall be manual control 1/4 turn Akron heavy duty valves with stainless steel ball unless specified otherwise.

The valves shall have an all cast brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self- locking ball feature using an automatic friction lock design and specially designed flow optimizing brass ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts.

FOAM SYSTEM

A Hale "FoamLogix 2.1A" 2.1 GPM foam system shall be supplied on the apparatus. The apparatus shall be equipped with an automatic electronically controlled, direct injection, rotary gear pump, discharge side foam proportioning system. Foam proportioning operation shall be based on direct measurement of water flow, and remain consistent within the specified flows and pressures.

The foam system will operate as a Class A system.

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SYSTEM REQUIREMENTS

The complete foam proportioning system shall include the following:

1) Foam Pump
2) Control System
3) Foam Concentrate Strainer
4) Integral Check Valve/Injector Fitting.
5) Flow meter
6) Control Cables
7) Low Tank Level Switch
8) Water Discharge Check Valves

FOAM PUMP

The foam proportioning system shall be compatible with Class A foam concentrates. The foam proportioning system shall be capable of delivering the rated foam concentrate flow with the above mentioned foam concentrate type. The foam proportioning system shall be based on an electric motor driven, rotary gear foam concentrate pump, rated at 2.1GPM (7.9 LPM) foam concentrate flow rate with maximum operating pressure of 400 PSIG (28 bar).

The foam pump/motor assembly shall be permanently attached to an apparatus mountable base plate. A foam concentrate flow meter shall be integral to the foam concentrate pump. The foam concentrate flow meter shall provide a signal to the electronic control unit to make sure the proper amount of foam concentrate is injected into the discharge stream. The entire base plate mounted assembly shall have electrical components sealed to NEMA 4X or equal for mounting in the apparatus pump compartment or any suitable location on the apparatus.

EXTERNAL FOAM TANK

A thirty (30) gallon polypropylene foam concentrate tank shall be furnished as an external component of the booster tank. The foam tank shall have an anti-foaming fill stack and removable screen located in an accessible area. The foam tank fill tower shall be equipped with a latch, pressure/vacuum vent and have a sealed airtight cover.

The foam tank shall be plumbed to the on board "Class A" foam system. A drain valve shall be provided at the lowest point of the foam tank. The foam tank shall drain shall directly to the surface below the apparatus without contacting other body or chassis components. The following labels shall be attached to the foam tank:

"CLASS A FOAM TANK FILL"
"WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM"

LOW TANK LEVEL SWITCH

A low tank level switch shall be installed in the foam concentrate tank. The low tank level sensor shall be connected to the foam proportioning system to provide protection against dry running of the foam pump. The low tank level sensor shall be mounted on the side of the foam concentrate tank. The low tank level sensor and electrical connections shall be sealed to prevent infusion of foam concentrate into the wiring and possible short circuit of the tank level sensor.

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FOAM CONCENTRATE STRAINERS

Field serviceable foam concentrate strainers shall be provided in the foam concentrate suction line. When the strainer shall not be subject to flushing water pressure a plastic bodied in-line strainer shall be used. The strainer body shall be constructed of plastic with a stainless steel mesh screen and shall be compatible with Class A foam concentrates. A shutoff valve shall be provided to enable isolation of the strainer for service. The strainer shall be mounted in the pump compartment. The strainer shall be a low pressure device and shall not be subject to flush water pressure.

Where strainers are subject to flush water pressure, panel mounted field serviceable foam concentrate strainers rated at 500 PSIG (34 BAR) minimum shall be installed on the pump panel. The strainer body shall be constructed of brass with a chrome cap and an easily removable stainless steel mesh screen for field servicing. A 1-½ inch strainer with ¾ inch NPT connection ports shall be used for Class A foam concentrate.

INJECTOR FITTING AND CHECK VALVES

To prevent contamination of the foam concentrate supply, foam concentrate shall be injected into the water pump discharge stream through an integral check valve/injector fitting. The check valve/injector fitting shall be of one piece construction of brass and stainless steel. To prevent contamination of the water pump and apparatus booster tank wafer type check valves shall be installed in the water pump discharge piping prior to the foam injection point.

FLOWMETER

A paddlewheel type flow meter shall monitor water flow in foam capable discharges. The flow meter body shall be constructed of bronze and the sensor assembly shall be locked into the tee with a pin and screw on cap. The flow meter shall have a 500 PSIG (34 BAR) pressure rating per NFPA requirements.

One (1) flow meter is required for proper operation of the foam proportioning system. Power for the flow meter sensor shall be provided through the electrically shielded cable set from the control unit. Flow meters having NPT threaded and Victaulic connections shall be used in the water discharge piping.

The flow meter selected shall be sized to adequately monitor the minimum and maximum flow expected in the foam capable discharges.

CONTROL CABLES

The cables for connection of the control unit, distribution box, flow meter sensor, flow meter display units, pressure transducers and feedback sensor shall be 100% electrically shielded molded male by female cordsets. The cordsets shall have the ability to connect together and total length shall not exceed 40 feet (12 meters). The connections shall be keyed to prevent mis-connection and improper system operation. Shielding shall be provided by an aluminized mylar shield within the PVC outer jacket. A drain wire shall be tied to one of the pins on each end of the cable. No externally attached ferrite beads shall be installed for the purpose of electrical shielding. Coupling nuts on the cordset ends shall be constructed of nickel coated brass. When properly connected the connections shall be sealed to NEMA 4X or equal.

FOAM SUPPLY

The foam proportioning system shall be supplied from a separate apparatus mounted foam concentrate storage tank. The tank shall be constructed of materials compatible with foam concentrates being used in the

system. Provision shall be made for installation of low tank level sensors and routing of the wiring for the sensors. Tank capacity, venting, fill opening and foam outlet plumbing connections shall be in accordance with NFPA requirements.

SINGLE TANK FOAM TANK REFILL SYSTEM

A truck mounted 12-volt foam tank refill system shall be provided and installed on the apparatus. The refill system shall provide the ability to automatically refill the foam tank from the ground without carrying foam solution up to the foam cell in the hosebed.

The refill system shall be activated by an on/off rocker switch provided on a control panel installed on the pump panel. The foam refill system will automatically shut off when the foam tank is full. The refill system quick connection shall be located beneath the pump panel running board to prevent foam from spilling onto the running board during connection operations.

System features:

- Weather proof on/of rocker switch with integral green power on indicator light
- Red refill PUMP ON indicator light
- Automatic tank fill shutoff, vertical or side mount float switches
- Thermally protected 12-volt motor
- Relay operated motor power circuit
- 5 gpm capacity @ 8 foot lift
- Self priming pump, can run dry and re-prime itself automatically
- Composite pump head with Buna-N diaphragm
- All corrosion resistant components
- Compatible with Class A or Class B foam concentrates
- Quick connect inlet hose with wand
- Suction inlet strainer

FOAM SYSTEM OUTLETS

The foam system shall be distributed into the following discharge outlets:

One (1) front jumpline discharge.
Two (2) 1-1/2" speedlay discharges.
The booster hose reel.

FOAM SYSTEM CONTROLS

The system shall be equipped with an electronic control unit, suitable for installation on the pump operator panel as the single point of operation for the foam proportioning system. Incorporated within the control unit shall be a microprocessor that receives input from water flow meter while receiving foam concentrate pump output information from the foam concentrate flow meter. The microprocessor, through constant comparison of the flow signals, shall ensure the operator preset proportional amount of foam concentrate is injected into the discharge stream of the fire pump. The electronic control unit shall permit the pump operator to perform the following control and operation functions for the foam proportioning system:

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Provide push-button ON/OFF control of foam proportioning system.
Provide push-button control of foam proportioning rates from 0.1% to 10.0% (1.0% on a 2.1A and 3.3 systems), in 0.1% increments.
Show real time flow rate of water or foam solution.
Show total volume of water or foam solution discharged during and after foam operations.
Show foam concentrate injection rate.
Show total amount of foam concentrate consumed.
Permit resetting of totalized values for water and foam concentrate.
Simulate water flow rates for manual operation, calibration and testing of foam system.
Enable system setup and full range system diagnostic functions.
Indicate on LED bargraph foam concentrate is being injected and the foam system capacity.
Indicate on LED bargraph when system capacity is not within design parameters.
Store independent default values for Class A foam concentrate injection.
Flash a “low concentrate” warning when the foam concentrate tank runs low.
Flash a “no concentrate” warning and shut the system off when the foam tank is empty.
Flash a "low battery” warning when battery voltage is low enough to affect system operation.
Flash a "hot" warning when system is running hot due to low voltage or radiant heat.

A distribution box shall be attached to the base plate to provide ease of installation. The distribution box shall be sealed to a NEMA 4X or equal rating to permit installation in the pump compartment. Foam concentrate flow feedback shall be provided to the control unit through the distribution box by a sensor mounted in the foam pump body. Rotors in the foam discharge side of the foam pump shall provide the targets to pulse the sensor to generate a feedback signal.

The distribution box shall receive 12 volt direct current power from the apparatus electrical system as the only source of power to operate the system and power component sensors. Control power shall be distributed to the control unit, flow meter sensor and foam concentrate feedback sensor through a conductor in the 100% electrically shielded cable sets provided by the foam proportioner manufacturer. The microprocessor in the control unit shall process input signals from the flow meter sensor and foam feedback sensor to determine the proper duty cycle for the electric motor to run. The distribution box shall provide power to the electric motor, based on signals received from the control unit, at a variable rate to ensure that the correct proportion of foam concentrate, preset by the pump operator on the control unit, is injected into the water pump discharge stream. The distribution box shall have a main power control switch and over current protection for the foam proportioning system. All primary electrical wires for the foam concentrate system shall be type SXL or GXL (SAE J1128) per NFPA requirements. Electrical connections shall be made using heavy duty 5/16 inch diameter studs and nuts.

HEAT EXCHANGER DISCHARGE

A gated discharge line shall be installed to provide water from the fire pump to the chassis supplied heat exchanger to assist in engine cooling during pumping operations. The heat exchanger line shall be controlled at the pump operator's panel with a Class 1 valve.

100' FOUR-SECTION REAR-MOUNT PLATFORM SPECIFICATIONS

Platform Design and Construction

The minimum of a 100 foot four-section, steel or aluminum, aerial platform has a minimum height of 100 feet at the top of the platform handrail at 75 degrees elevation. The horizontal reach from the outside edge of the platform to the center of the turntable is 97 feet.

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Operation on grades

The aerial shall be capable of being operated with full rated capabilities in any plane up to 5-degrees out of level with the turntable leveled as much as possible by placement of the outriggers. Operation beyond this limit shall be at the operator's discretion.

Ladder Cradle Alignment Light

An amber LED indicator light will be supplied on the control console to indicate to the operator when the aerial is aligned with the travel bed support and can be lowered into the travel support.

A limit switch on the base section shall signal by means of an amber indicator light when the aerial rungs are in alignment.

State-of-the Art Technology

The aerial device materials, parts, technology or procedures used in construction of the apparatus are subject to change at the manufacturer's discretion to provide "equal or better" products and must be in compliance to applicable NFPA #1901 standards and industry standard practice.

BASE SECTION

The base section shall base rails shall be a minimum of 100,000 PSI material and the handrails shall be 100,000 PSI material.

LOWER-MID SECTION

The lower-mid-section base rails shall be a minimum of 100,000 PSI material and the handrails shall be 100,000 PSI steel material.

UPPER MID-SECTION

The upper-mid-section base rails shall be a minimum of 100,000 PSI material and the handrails shall be 70,000 PSI steel material.

FLY SECTION

The fly section shall be a minimum of shall be 70,000 PSI material and the handrails shall be 70,000 PSI steel material.

PLATFORM BASKET CONSTRUCTION

The platform basket shall be constructed of a steel frame with aluminum doors, front, sides and bottom with a minimum floor area of nineteen square feet. The high guard railing shall be approx 42” above the floor. The floor shall be built of aluminum bar grating for a skid resistant surface and to provide for drainage.

The gates on the left and right front corners shall swing inward and a gate for entry from the ladder to the platform shall swing upward.

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Heat Shield

A heat reflective shield is provided on the front, sides, and bottom of the platform.

Water Curtain Spray System

A water curtain system provides a cooling spray under the entire floor of the platform with a minimum of 75 gallons per minute. A single quarter turn valve with an actuator accessible from the platform shall control the spray system.

Safety Belt Attachment and Rope Eyelets

The platform shall have provisions for personnel working on the platform to attach fall protection harnesses. Four (4) stainless steel safety belt loops are provided in the platform, two at the front, one on each side.

Two (2) rope rescue eyelets, with a combined lifting capacity of 500 pounds, shall be welded to the bottom of the platform.

TESTING CRITERIA

The aerial ladder shall be inspected and tested by Underwriters Laboratories, Inc. The inspection shall be "Type One" system testing. A non-destructive test shall be performed on each unit at a rate of 100% inspection by the Underwriters Laboratories inspector, exceeding the requirements applicable section of NFPA #1901 for new apparatus. All non-destructive procedures shall be fully documented and meet or exceed the requirements of applicable sections of NFPA #1901.

AERIAL WATERWAY FLOW TESTING

The waterway flow test shall be conducted by an accredited third party testing organization with certified results provided on delivery of the apparatus. If the aerial device is equipped with a permanent water system and has a rated vertical height of 110 ft (34 m) or less, standard model flow test data shall be provided to the purchaser.

If the water system has been modified from the standard model configuration, a new flow test shall be conducted to determine that the friction loss in the water system between the base of the swivel and the monitor outlet does not exceed 100 psi (700 kPa) with 1000 gpm (3748 L/min) flowing and with the water system at full extension.

A flow test shall be conducted on each vehicle to determine that the water system is capable of flowing 1000 gpm (3748 L/min) (or rating as specified in these specifications) at 100 psi (700 kPa) nozzle pressure with the aerial device at full elevation and extension.

The apparatus is equipped with a fire pump designed to supply the water system, the test will be conducted using the onboard fire pump.

The intake pressure to the fire pump shall not exceed 20 psi (140 kPa).

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OUTRIGGERS AND STABILIZERS

The aerial stabilizer assemblies, outriggers assemblies, beam, outer jack tube, inner jack tube, jack cover plate, and jack pad shall be galvanized.

The outriggers and stabilizers shall be galvanized inside and out. The process shall eliminate the rusting, scratching or paint chips on the outriggers. The galvanizing process shall permeate the metal and shall not be an "over-coating only" on outside surfaces. The galvanized components shall lessen the potential for corrosion and eliminates the requirement for finish paint. The process shall negate any later requirement for touch-up paint or total repaint of the outrigger/stabilizer assemblies.

The galvanizing shall provide the steel outriggers with both barrier and cathodic protection from corrosion. The galvanizing process shall immerse the complete outrigger and stabilizer components in molten zinc. The galvanizing diffusion process shall allow the zinc to bond to the steel, at the molecular level. The galvanized zinc coating shall provide a barrier that shields the steel from the environment.

HANDRAIL COLOR: BLACK

The turntable handrails shall be coved with a black slip-resistant coating.

AERIAL LADDER BED

On the base section of the aerial device, a stainless steel scuff plate shall be installed where the aerial comes in contact with the travel support.

AERIAL LADDER RUNG SPECIFICATIONS

For ease of climbing the ladder rungs shall be equally spaced on a maximum 14" centers and minimum 11.75" centers and shall have a skid-resistant surface or covering.

For added safety, skid-resistant rung covering shall be provided. The rung covering shall not twist and shall cover at least 60 percent of the climbing area of each rung.

Round rungs shall be provided and shall have a minimum outside diameter of 1-1/4", including the skid-resistant surface or covering.

For maximum strength, the minimum design load for each rung shall be 500 lb distributed over a 3-1/2" wide area at the center of the length of the rung with the rung oriented in its weakest position.

NON-SKID AERIAL RUNG COVERING

Each aerial rung shall be covered with two (2) pieces of a protective, 3-M safety walk non- skid material.

AERIAL WEAR PADS

The aerial wear pads shall be easily adjustable and designed to make replacement easy.

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AERIAL SIGN PANELS

The aerial manufacturer shall supply aerial sign brackets welded to the base section of the aerial. These brackets shall be located on both sides of the base section.
The base section of the aerial device shall include sign panels, 12" high x 120" long, one on each side of the aerial. The sign panels shall be painted to match the aerial ladder sections and lettered with 23k gold "SURFSIDE BEACH"

EXTENSION MARKINGS

To improve safety and to provide the operator with vital information, extension markings shall be provided. For best visibility the base section of the ladder shall include markings on the outside of the left handrail and the inside of the right handrail to indicate extension position of the ladder in operation. The markings will be RED numbers and mark every 10 feet with a hash mark between the numbers.

ROOF LADDER MOUNTING BRACKETS -- BASE SECTION

There shall be welded plates and bolt on roof ladder mounting brackets installed on the outside of the base section of the aerial opposite of the control panel.

An Alco-lite roof ladder shall be installed on the base section of the aerial. The ladder is to be a standard width Alco-Lite roof ladder

ROOF LADDER

An Alco-Lite Model PRL-16, 16 foot aluminum roof ladder with folding steel roof hooks on one end and steel spikes on the other end shall be provided on the apparatus. The ladder shall meet or exceed applicable NFPA standards.

RESCUE BASKET MOUNTINGS

A Junkins rescue basket, model #JSA-200 or approved equal plastic rescue basket, and mounting shall be installed on the outside of the base section. The mounting will be an aluminum box mounted on the outside of the base section of the aerial ladder for storage of a rescue basket. The box shall have a hinged cover with latches to secure the cover.

The box shall be approximately 26" high x 10" wide x 86" long. It shall be constructed of 1/8" smooth aluminum and painted to match ladder sections.

PLATFORM BASKET -- EXTENDING ARMS

Provisions are to be furnished for attaching a rescue basket to the platform basket.

PLATFORM BREATHING AIR SYSTEM

A breathing air system shall be provided from the base section of the platform to the tip of the platform basket.. The system shall be installed to comply with all applicable sections of NFPA #1901 standards. The cylinders shall be shipped fully pressurized with breathing air.

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The breathing air system service and operation shall be covered in the manuals provided with the apparatus on delivery. In addition, the manufacturer shall supply a certificate of air quality on delivery of the apparatus.

The installation shall include the following equipment:

1. Two (2) 6000 PSI 509 cubic foot DOT air cylinders
2. Two (2) pressure gauges on the cylinders
3. One (1) air pressure regulator with downstream pressure gauge
4. One (1) low pressure alarm system
5. One (1) Grade D air filter
6. Two (2) air outlets in platform basket

AERIAL BREATHING AIR SYSTEM REFILL AND REFILL HOSE

A breathing air quarter-turn refill valve shall be mounted between the breathing air regulator and the air cylinder and shall be used for refilling the base section air cylinders.

In addition, 75 feet of high pressure breathing air hose shall be provided with appropriate quick disconnect fittings.

AERIAL BREATHING AIR OUTLET AT THE TURNTABLE

One (1) breathing air quick disconnect shall be mounted and installed at the turntable, with piping to the breathing air system.

SMART AERIAL AIR MONITOR

The Smart Aerial breathing air system shall be installed. The Smart Aerial Air Monitor has a single LED light that shall be located at the aerial control panel and the platform control panel.

The Air Monitor uses a pre-calibrated pressure range based on the full calibration of the air bottle. An LED indicator light flashes in a slow, two flashes per second pattern when the system pressure reaches 30 percent or less. When the pressure is below 20 percent, the light flashes rapidly, 5 flashes per second, and a warning horn chirps twice every three seconds. When air pressure is less then 1 percent, the warning horn stops chirping, but the RED LED indicator light remains flashing at a rate of 5 flashes per second.

MOUNTING PLATE FOR AXE -- PLATFORM BASKET

Mounting plates shall be installed for an axe mounting in the right rear corner on the inside of the platform basket.

MOUNTING PLATE FOR PIKE POLE -- FLY SECTION

Welded-in mounting plates shall be installed for a pike pole mounting on the left side of the fly section.

PLATFORM FLOOR LIGHTING

LED rope lighting will be provided to illuminate the platform. The platform floor lighting shall be activated by the aerial master switch.

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PLATFORM LEVELING

The platform leveling system shall be provided and designed so that the platform can be supported and maintained level relative to the turntable, regardless of elevation.

The system shall provide the capability to manually tilt the basket and hold this position for better access to the work area.

8" EXTENSION ON PLATFORM BASKET

The platform sides shall be extended 8" beyond the platform basket frame with a rubber bumper along the outside edge.

PLATFORM OPENING -- MANSAVER BAR

One (1) Fire Research 24" ManSaver aerial safety bar with 6" loop, or equivalent, shall be installed. The safety bar shall open either upward or inward, and be spring loaded to automatically return to the horizontal closed position. The safety bar assembly shall be made of aluminum and stainless steel.

The location shall be installed at the platform basket opening from the aerial fly section to the platform basket.

HOSE EQUIPMENT STORAGE BOX

Two (2) aluminum storage boxes shall be installed. Each box holds 100' of 1-3/4" hose.

Two (2) storage boxes, 22" high x 22" wide x 8" deep, shall be installed on each side at the center of the platform basket.

PLATFORM STORAGE BOX

The platform storage boxs shall be painted the same color as the platform basket.

PLATFORM BUMPERS

A heavy extruded rubber bumper shall be fastened to the outside of the platform for extra protection. To protect the bottom of the platform there shall be four (4) rubber bumpers attached.

PLATFORM ROTATION SYSTEM

One (1) or two (2) hydraulic motors to operate planetary gearboxes, capable of field adjustment, to rotate the aerial platform activating the rotation system.

TURNTABLE AND PLATFORM CONTROL CONSOLES

Aerial Control Operating System

The aerial control system is monitored by programmable logic control. The programmable logic control operating system must be able to monitor the following functions 50 times per second to offer maximum safety. The monitored aerial control functions are as follows:

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Aerial Speed

The speeds of all aerial functions are proportionally regulated by the elevation and extension of the aerial. The aerial shall have proportional slow down on full extension and full retraction. The elevation system shall proportionally reduce the speed at sixty (60) degrees and ramp to off at full elevation. Lowering shall proportionally reduce the speed at three (3) degrees and ramp to off at minus ten (-10) degrees. When the aerial is fully retracted the aerial speed shall be 20 percent faster then when fully extended.

The turntable control console shall have a toggle switch to energize the hydraulic system for the aerial functions. The switch shall have three (3) functions, "high speed", "low speed", and "off". All ladder controls operate at high (full speed) or low (reduced speed). Each aerial "Soft Touch" control handle shall lock in the neutral position. With the ladder control handle activated the RPM's shall increase to 1,250 RPM and maintain there for two (2) seconds after returning to the neutral position. An emergency stop button shall be used for emergency stopping and shall return the system to the "off" position, allowing the engine speed to return to normal idle speed and the hydraulic system to de-energized.

Cab and Body Collision Protection

Programmable cab and body collision protection will have three (3) amber lights to indicate Right Rotation Disabled, Down Disabled and Left Rotation Disabled. The lights shall illuminate when aerial functions (right rotation, left rotation or lowering) are disabled. All three lights shall illuminate when the E-STOP is pushed or the outrigger interlock is active.

Auto Bedding

The aerial shall have a momentary switch for auto bedding. Activation of the momentary switch when the aerial is within 20 degrees left or right of the ladder bed, below 20 degrees elevation and 75 percent retracted will automatically bed the aerial.

Rung Alignment

The aerial rung alignment light shall be monitored by an absolute encoder system. The indicator light shall illuminate when the rungs are aligned for the safety of climbing the aerial.

Soft Touch Controls

All aerial controls left/right, extend/retract and raise/lower shall be Soft Touch controllers. The Soft Touch controls shall have built in ramp up and ramp down capabilities. The turntable controls shall override the platform controls at all times.

Short Jacked Outriggers

Programmable logic control system allows the aerial to rotate over the short jacked outriggers, when the aerial is within the safe operating parameters of the programmable logic control program. A red warning light at the outrigger and aerial operator's control consoles shall warn the operator that one (1) or more outriggers have been "short set". In the event the vehicle has been set up with one (1) or more of the outriggers "short set", any rotation of the turntable to an unsafe short set outrigger shall automatically ramp the rotation of the turntable to a feather-soft stop and allow the operator to return to safe operating parameters.

Aerial Load Gauge

An aerial load gauge shall give a continuous reading of the load on the device. This gauge shall have a green light showing the load on the ladder, an amber light will tell the operator when the aerial is nearing the rated load and a red light will flash at the point where rated load capacity is reached. Additionally, there shall be a pulsating warning horn that shall sound if the ladder is overloaded by 0 - 10% of its rated capacity. The horn shall emit a constant sound when rated capacity is exceeded by more than 10%. If the ladder is over loaded the extension and lowering ability of the aerial shall be disabled until the weight can be removed or shifted.

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Standard Aerial Control Panel

The turntable shall have the control console mounted on the driver's side (when the aerial is stowed) with the following items on the panel:

- One (1) switch for auto bedding
- One (1) turntable tracking light switch (panel lights and tracking lights shall be connected to this switch)
- One (1) tip light switch (tip lights and telescoping lights shall be connected to this switch)
- One (1) rung alignment light
- One (1) emergency pump switch
- One (1) system pressure gauge, 0-5,000 psi minimum
- One (1) emergency stop button
- One (1) red light to indicate when outriggers are not fully extended
- One (1) switch to lock all aerial functions (high/low/off)
- Three (3) lights green, amber, and red with audible alarm for the aerial load system display
- Three (3) amber lights for left rotation disable, down disable, and right rotation disable.
- Three (3) remote monitor switches
- Three (3) handles for operation of the aerial for raise / lower, extension / retraction, and swing left/right functions

The system shall be capable of performing simultaneous outrigger functions or simultaneous aerial functions.

Console Cover and Lighting

An aluminum treadplate hinged cover shall be provided on the turntable control console with one (1) courtesy
light located in the cover.

Three (3) turntable work lights shall be provided on the turntable for added operator visibility and safety.

Standard Platform Control Panel

- One (1) switch for auto bedding
- One (1) platform light switch (tip lights and telescoping lights shall be connected to this switch)
- One (1) rung alignment light
- One (1) emergency stop button
- One (1) red light to indicate when outriggers are not fully extended
- One (1) switch to lock all aerial functions (high/low/off)
- Three (3) lights green, amber, and red with audible alarm for the aerial load system display
- Three (3) amber lights for left rotation disable, down disable, and right rotation disable.
- Three (3) remote nozzle switches
- Three (3) handles for operation of the aerial for raise / lower, extension / retraction, and swing left/right functions

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SAFETY CHAINS -- TURNTABLE OPENINGS

Aerial manufacturer shall install safety chains between the covered handrails on the turntable.

HYDRAULIC HIGH PRESSURE OIL FILTER

The hydraulic system shall be equipped with a 'high pressure' hydraulic oil filter between the pump and the control valve designed to meet the flow requirements of the system. The high pressure filter will have a dirty element light on the outrigger panel for the convenience of the mechanic.

HYDRALIC OIL RETURN LINE FILTER WITH LIGHT

A 10 micron low pressure return line filter element shall be connected to the hydraulic reservoir. The 10 micron return line replaceable filter element with a dirty filter indicator light shall be located on the outrigger control panel.

AERIAL WARNING LABELS

Danger, caution, and warning labels shall be installed at all aerial control stations, individual controls, and at various locations on the aerial device. These labels shall be in compliance to industry warning symbols, ASME, SAE, and applicable NFPA #1901 standard. These labels shall be in English with symbols commonly used in the fire industry.

AERIAL LOAD CHART -- TURNTABLE CONTROL STAND

An aerial load chart shall be mounted on the base section of the aerial to supplement the load gauge installed on the aerial control console. The load chart shall include the height and reach and the load at six (6) different angles with and without water. An arrow will be attached to the load chart to indicate the angle of elevation. To comply with NFPA standards the load chart shall be illuminated by a light.

AIR HORN CONTROL SWITCH -- TURNTABLE

A momentary switch shall be provided for controlling the vehicle's air horn at the turntable control console. The switch will be mounted on the turntable control console.

AUTOMATIC LUBRICATION SYSTEM

The aerial device shall be equipped with an eight point Vogel automatic lubrication system or equal. The system will automatically grease the pivot points on the aerial base section, top and bottom pins of the elevation cylinders, the rotation bearing and the external gear on the rotation bearing.

TORQUE BOX

The torque box connecting the turntable to the outriggers shall provide the rigidity needed for the aerial to be operated at -12 degrees to a +75 degrees elevation and full extension.

LADDER STORAGE RACK -- INSIDE TORQUE BOX

A slide in ladder rack shall be installed inside the torque box to allow the storage of the following 115' feet of ground ladders and pike poles, which shall be supplied with the apparatus:

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1. One (1) 10' folding attic ladder, Alco-Lite #FL-10
2. One (1) 14' Fresno ladder, Alco-Lite #CJL-14
3. Two (2) 16' roof ladders, Alco-Lite #PRL-16
4. One (1) 24' two section extension ladder, Alco-Lite #PEL-24
5. One (1) 35' three section extension ladder, Alco-Lite #PEL-35

1. One (1) 12' fiberglass pike poles
2. One (1) 10' fiberglass pike poles
3. One (1) 8' fiberglass pike poles
4. One (1) 6' fiberglass pike poles
5. Two (2) 4' fiberglass pike poles with "D" handles

AERIAL OUTRIGGERS AND STABILIZER SPECIFICATIONS

Aerial Set-Up Requirements

With the stabilizers set, the aerial device shall be capable of being raised from the bedded position to maximum elevation and extension and rotated 90 degrees. Two or more of these functions shall be permitted to be performed simultaneously. These functions are required to be completed within 75 seconds or less, no exceptions.

Extension Beams

The extension beams shall entirely enclose the extension cylinders to prevent damage to the rods and hoses. Each outrigger shall be controlled independently, which can extend and lower the outrigger at the same time or raise and retract the outrigger at the same time.

A double box design shall enclose the jack cylinders completely to protect the rods from damage that could result from exterior circumstances.

Jack Cylinders

The jack cylinders shall have pilot operated check valves for both the raised and lowered positions. Each jack tube shall be drilled for mechanical pin locks for a safety backup.

The outrigger jack cylinders shall be mounted so they can be removed from the top of the outrigger jack tube. Jack cylinders that are removed from the bottom of the outrigger jack tube will not be accepted.

Outrigger Deployment Alarm and Warning System

The outrigger deployment alarm, of not less than 87 DBA, shall sound at all times while the outrigger master switch is in the on position and stops sounding only when the outrigger switch is turned off. The audible alarm shall warn personnel that outrigger movement is possible at any time the switch is on.

A red LED flashing light shall be mounted to the inside of the vertical outrigger jack beam. The aerial master switch shall activate the lights.

An amber indicator light shall be located on the outrigger control panel for each outrigger to indicate when the outrigger jack is supporting enough load to be in firm contact with the ground.

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Safety Features

The outrigger system provides the following minimum safety features:

1. Amber indicator light at the outrigger control station shall indicate circuit completion to show that the unit is ready for aerial operation.

2. Red warning lights at the outrigger and aerial operator's control consoles shall warn the operator that one (1) or more outriggers has been short set.

3. An aerial/outrigger interlock system shall be provided to prevent the lifting of the aerial from the nested position until the operator places all jacks in the load supporting configuration. An electrical can-bus encoder system at the ladder pivot prevents operation of the outriggers once the aerial has been elevated from the nested position.

4. Ground illumination lights shall be provided to illuminate the area directly under the outriggers for each extending outrigger.

5. A light will be provided in the cab to alert the operator when the outrigger is not in the stowed position.

Outrigger and Stabilizer Specifications

The specified outriggers and torque box system shall provide a 1-1/2 to 1 stability safety factor when the aerial is in any operating position.

The stability requirements shall be met by the apparatus on which the aerial device is mounted when that apparatus is in a service-ready condition but with all normally removable items such as water, hose, ground ladders, and loose equipment removed.

The aerial device shall be capable of sustaining a static load 1-1/3 times its rated capacity in every position in which the aerial device can be placed when the apparatus is on a slope of 5 degrees downward in the direction most likely to cause overturning.

All outriggers and stabilizers that protrude beyond the body of the apparatus shall be striped or painted with reflective material so as to indicate a hazard or obstruction. Each outrigger or stabilizer shall also be provided with one or more red warning light(s) located either on the stabilizer or in the body panel visible on the side of the apparatus where the stabilizer is located.

FRONT AND REAR OUTRIGGERS

Two (2) front and two (2) rear out and down H-style outriggers shall be provided on the apparatus. The rear outriggers shall be located directly behind the rear axle and the front outriggers shall be connected to the front of the torque box. These units shall be equipped with manual outrigger control valves. The controls shall be located at the rear and to the outside of the chassis. This location shall give the operator full view and control of each outrigger. All controls handles shall move in the same direction as the outrigger movement.

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Outrigger Spread

The total width from the center of pivot pin to center of pivot pin when the outriggers are fully extended shall be approximately 17’ 6".

SIDE TO SIDE AND FRONT TO REAR LEVELING GAUGES

A leveling gauge shall be installed on the rear to show when the apparatus is level from side to side. A second gauge shall be provided on the rear to show when the apparatus is level from front to back. The approximate size of the leveling gauges shall be 3" x 1-1/2".

OUTRIGGER AUXILIARY PLATES

Auxiliary outrigger plates, 24" x 24", shall be provided for each outrigger. The plates shall be a lightweight #PE1000 strong and lightweight engineered plastic with a handle for easy movement. The plates shall be 1-1/2" thick.

OUTRIGGER SHIELD LIGHTS

Warning lights shall be located on the outside of the outrigger shield. The lights will be wired to the chassis warning lights switch located in the cab.

SHORT-SET OUTRIGGERS

The aerial device shall be equipped with a system for short-jacking.

A short-set outrigger is an outrigger that is not out at least 96 percent of its total extension capability.

Short-set front outriggers shall not affect ladder movement while the ladder is less than 2 degrees or greater than 50 degrees of rotation on either side of the ladder bed and less than 45 degrees elevated.

Short-Set rear outriggers shall not affect ladder movement while the ladder is within 50 degrees either side of the ladder bed and less than 45 degrees elevated.

If a short-set restriction is active, the Outrigger Not Extended indicator light at all ladder control stations shall flash rapidly.

The aerial shall monitor the outrigger placement of all outriggers and the elevation extension and load on the aerial to determine if the aerial can rotate safely over a short set outrigger.

OUTRIGGER CONTROL PANEL

The outrigger control panel shall have a switch to energize the hydraulic system for outrigger functions. The switch shall increase the engine speed to 1,200 RPM when in the "ON" position. In the "OFF" position, the engine speed shall return to normal idle speed and the hydraulic system shall be de-energized. An outrigger control with a Automatic “high Idle” activation control is acceptable

Control Panel

The control panel shall include the following:

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1. Manual override system to override the outrigger-aerial interlock system
2. One (1) switch to start and stop all aerial and outrigger operations.
3. One (1) switch for the emergency power unit.
4. Amber indicating lights shall signal when the outriggers are extended or supporting sufficient load.
5. A pulsing beeper shall be activated when the outrigger system is in use.
6. One (1) red flashing light shall be provided to indicate if outriggers have been short set.
7. One (1) aerial hour meter connected to the PTO shall be installed at the outrigger control station.
8. One (1) hydraulic pressure filter indicator light.

AMBER INDICATING LIGHTS

Indicator lights shall be furnished to indicate when an outrigger is extended and the jack cylinder is supporting sufficient load, when an outrigger is extended and not lowered indicating the jack cylinder is not supporting any load, or if an outrigger is short-jacked.

LADDER & OUTRIGGER STOWED INDICATOR

A ladder and outrigger stowed indicator light will be provided in the cab to show that the ladder is not bedded and/or that one or more outriggers are not in the stowed position. The wire will be connected to the door ajar light.

OUTRIGGER ACCESS PANELS -- EXTENSION PANELS

Outrigger access panels shall be located on the body of the aerial to allow easy access to the outrigger extension cylinders. These panels shall be located beside the outrigger jack cylinder.

OUTRIGGER WARNING SIGNS

The outrigger shields shall have warning signs installed to warn of dangers in operation of the outrigger system.

PLATFORM CAPABILITIES -- 1500GPM

The following are minimum aerial platform and water capabilities for the operation of this unit in the unsupported configuration with the truck level, the outriggers fully extended and lowered to relieve the chassis weight from the axles. The capabilities are based upon 360-degree continuous rotation and up to full extension.

Platform Operations With Waterway Dry

-12 Degrees to 30 Degrees	1,000 pounds in the platform basket or 1,250 pounds evenly distributed
30 Degrees to 45 Degrees	1,000 pounds in the platform basket or 1,500 pounds evenly distributed
45 Degrees to 60 Degrees	1,000 pounds in the platform basket or 2,000 pounds evenly distributed

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60 Degrees to 75 Degrees	1,000 pounds in the platform basket or 2,500 pounds evenly distributed

Platform Operations With 1500 GPM Water Flowing 90-degree to the side and 45 degrees up and 45 degrees down

The following capabilities are based upon continuous 360-degree rotation and up to full extension.

Elevation	Platform Weight Capacity
-12 Degrees to 45 Degrees	500 pounds in the platform basket or 750 pounds evenly distributed
45 Degrees to 60 Degrees	500 pounds in the platform basket or 1,500 pounds evenly distributed
60 Degrees to 75 Degrees	500 pounds in the platform basket or 2,000 pounds evenly distributed

The above ratings shall be based on average weight of personnel on the ladder at 250 pounds each. The ladder must meet the 2:1 safety factor requirement for material based on the weight of the ladder plus a 1,000 pound live load at the platform, flowing 1,500 GPM of water at 90 degrees to the side of the platform at zero degrees elevation.

WATERWAY SUPPLY PLUMBING FROM PUMP TO REAR

Plumbing shall be installed from the fire pump through a tee at the aerial waterway and to the rear of the truck. A 4" aluminum pipe shall be installed in the torque box with 4" Victaulic couplings on both ends. The rear waterway inlet/outlet shall connect from the tee at the aerial waterway swivel and continue to the back of the truck and under the torque box. The inlet/outlet will be located to the right hand center of the vehicle.

4" WATERWAY SWIVEL

There shall be a 4" waterway swivel with 360 degrees continuous rotation. It shall be installed through the turntable and torque box to connect the aerial waterway plumbing from the water pump to the aerial. The hydraulic oil for the aerial shall be directed through a three-port hydraulic swivel with 360 degrees continuous rotation.

TELESCOPING WATERWAY -- PLATFORM

A aerial waterway shall be provided from the base of the aerial device to the tip of the fly section. The aerial telescoping aluminum waterway shall be fabricated of aluminum and shall have four (4) tubes as follows:

1. 5" outside diameter at the base section
2. 4.5" outside diameter at the lower mid-section,
3. 4" outside diameter at the upper mid-section
4. 3.5" outside diameter at the fly section

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Monitor Installation

An Akron Brass, model 3578, 2000 GPM rated monitor shall be provided at the end of the waterway. The monitor is an all electric single waterway monitor constructed of lightweight Pyrolite with a 4", 150 pound flange inlet and 3.5" thread outlet with cast-in turning vanes in each elbow. The monitor shall have fully enclosed motors and gears with manual overrides for both horizontal and vertical rotation. The manual override shall have captive cranks, one for horizontal and one for vertical rotation, and may be used simultaneously.

Three (3) toggle switches shall be located at the turntable aerial control stand and at the platform control cosole. The switches will control the raise/lower, stream/shape, and left/right functions of the monitor. The controls at the aerial control stand will override the controls at the tip of the aerial.

An Akron Brass model 5178 electrically controlled combination solid stream and fog nozzle shall be provided at the end of the monitor. The nozzle shall be constructed of Pyrolite, with a 2" orifice solid bore, and a fog flow of 1500 GPM at 80 PSI. The nozzle shall have a 12 volt electric motor, a 3.5" NH inlet, and built-in stream shaper.

Butterfly Valve

One (1) 4" handwheel operated butterfly valve shall be installed between the end of the waterway and the monitor. The butterfly valve shall direct water flow from the waterway to the 2-1/2" pre-connect discharge at the rear of the platform basket. A 2-1/2" quarter turn ball valve shall be installed ahead of the 2-1/2" pre-connect discharge. The 2-1/2" pre-connect with 90 degree swiveling discharge shall have a NH male thread. One (1) 2-1/2" cap and chain shall be supplied with pre-connect.
No 2.5" to 1.5" Reducer with Cap

RELIEF & DRAIN VALVE -- WATERWAY SYSTEM

A 2-1/2" preset relief valve shall be placed in the aerial waterway system and shall be capable of the dumping of water to the environment to protect the waterway system.

One (1) 1-1/2" quarter turn drain valve shall be installed at the low point of the waterway plumbing system.

SINGLE DISPLAY AERIAL WATERWAY FLOW METER

One (1) Single Display Flowminder shall be provided. The digital pressure gauge includes large super bright digits for excellent readability in all types of emergency situations. Wires transmit signals from a transducer to the display so there is no water sensing lines to freeze up and cause problems.

The flowmeter display shall be located at the turntable control stand.

COMMUNICATION SYSTEM -- PLATFORM TURNTABLE

The two station intercom communication system shall have the master station at the platform aerial turntable and secondary intercom and speaker at the platform basket area.

The master station shall have a volume control and a push-to-talk button. The remote station shall operate "hands free" and constantly transmit to the master station and speaker, unless the master station push-to-talk button is pressed.

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The intercom shall be designed for exterior aerial application. Each station shall have a weather resistant and protective housing and water resistant speakers.

TRACKING LIGHTS -- 12 VOLT FLY SECTION

Two (2) Unity model #AG-S-H spotlights shall be installed on the base section of the aerial ladder ahead of the hoist cylinders. The bulbs shall be 50 watt halogen spot type and activated from the turntable tracking light switch on the turntable and from a switch on the lamphead.

DOT TRAVEL LIGHTS

Five (5) amber DOT travel lights shall be installed three (3) on the front of the platform basket and one (1) on each side. The lights shall be LED and shall be connected to the ignition power.

PLATFORM BASKET WARNING LIGHTS

The platform basket warning lights shall be the Whelen LIN3™. The LIN3™ lights are super LED and have fifteen (15) ScanLock patterns and ten (10) ScanLock patterns with synchronization capability.

Four (4) Whelen LED lights shall be mounted on the platform basket, two on the front and one on each side of the basket. The lights are to be red in color, part # RSR02ZCR.

The platform basket warning lights shall be activated from warning light switch and/or the aerial power switch.

TIP LIGHTS -- 120 VOLT PLATFORM BASKET

Two (2) Fire Research Optimum model OPA570-S75-ON floodlights shall be provided, one each side of the platform basket. The lamphead mounting arm shall terminate in 3/4" NPT threads. Wiring shall extend from the lamphead mounting arm bottom. The lights shall be activated from the tip lights switch on the turntable and from the platform lights switch in the platform.

FLOODLIGHTS -- 120 VOLT UNDER PLATFORM BASKET

One (1) Fire Research Focus model FCA200-S75 recessed light shall be installed under the platform basket. The housing shall incorporate internal heat-dissipating fins and have cutout dimensions not to exceed 2" deep by 4-1/4" high by 9-3/4" wide. The lamphead shall protrude no more that 1-1/2" from the housing flange. Wiring shall extend from the bottom of the recessed housing. These lights shall be activated from the tip light switch on the turntable and the scene light switch at the platform.

TELESCOPIC 750 WATT FLOODLIGHT --PLATFORM BASKET

Fire Research Optimum model OPA540-S75-ON side mount pull up telescopic lights shall be installed on each side of the platform basket. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. An internal brake shall slow the extension pole during lowering. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 2-3/4" offset. Wiring shall extend from the pole bottom with a 4' retractile cord. These lights shall be activated from the tip light switch on the turntable and the platform lights switch on the platform.

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120 VOLT RECEPTACLE -- PLATFORM BASKET

One (1) 120-volt AC circuit shall be run through the collector ring swivel, with one (1) L5-20 receptacle mounted in the platform basket with a weather proof cover.

LADDER RUNG LIGHTING

The ladder rungs of each aerial section shall be equipped with 12-volt “BLUE” LED rope lighting. The rope lighting shall run the full length of the climbing portion of each section. These lights shall be activated from the turntable tracking light switch.

CAB TILT AERIAL INTERLOCK

A limit switch shall be installed on the aerial boom support to inhibit cab tilt unless the aerial is raised from the ladder travel support.

HYDRAULIC SYSTEM

The hydraulic system shall design and furnished to meet the requirements for the aerial as bid. This includes tank capacity and filters.

HYDRAULIC PUMP DRIVE SYSTEM

An electrical start-stop "hot shift" PTO shall be mounted to the transmission. The PTO shall be connected to the hydraulic pump and shall supply power for all aerial and outrigger operations. Electrical safety wiring shall require that the vehicle be in neutral and the parking brake set before the PTO will operate. A "PTO Engaged" indicator light is installed in the cab of the apparatus.

EMERGENCY HYDRAULIC SYSTEM -- 12VOLT

An emergency hydraulic system shall be provided for capability for limited ladder functions and to stow the ladder and outriggers in case of prime mover failure.

The emergency system shall be powered from the 12-volt electrical system from the apparatus battery system and shall not be load managed.

HYDRAULIC DRAIN LINE

One (1) quarter turn shut-off valve shall be connected in the drain line of the hydraulic oil tank..

HYDRAULIC OIL VALVE CONTROL

One (1) quarter turn shut-off valve shall be supplied between the suction line of the hydraulic oil tank and the inlet of the hydraulic pump.

HARNESS, CMC PROTECH FIRE-RESCUE

A Darley CMC ProTech Fire-Recsue Harness shall be supplied with the fire apparatus. The unique design of the dorsal D-Ring allows adjustment for different size rescuers, but stays in place when loaded, greatly

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increasing comfort. Gear loops have been added for storing equipment, but their design allows easy removal when using the harness for confined space entries. Quick-connect shoulder straps and leg loops make donning the harness simple and fast. Molded pads on the leg loops can be adjusted to the most comfortable position.

WATER TANK CONSTRUCTION

The tank shall have a rated capacity of 500 U.S. gallons, complete with lifetime warranty. Acceptable tank manufacturers are UPF and ProPoly.

The tank shall be constructed of 1/2" thick Polyprene sheet stock. This material shall be non-corrosive stress relieved thermoplastic, white in color and UV stabilized for maximum protection. The tank shall be of a special configuration and is so designed to be completely independent of the body and compartments. All exterior tank joints and seems shall be extrusion welded and/or contain the Bent Edge™ and tested for maximum strength and integrity. The top of the tank is fitted with removable lifting eyes designed with a 3-to-1 safety factor to facilitate easy removal.

The transverse and longitudinal swash partitions shall be manufactured of Polyprene material. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow and meet NFPA rules. All swash partitions interlock with one another and are welded to each other as well as to the walls and floor of the tank.

WATER TANK CAPACITY

The water tank shall be rectangular in shape and shall have a maximum capacity of 500 US gallons.

TANK LID & FILL TOWER

The tank shall have a combination vent and fill tower.

The tank cover shall be constructed of recessed 1/2" thick white Polyprene, stress relieved, UV stabilized material. A minimum of two lifting dowels shall be drilled and tapped to accommodate the lifting eyes.

OVERFLOW AND VENT PIPE

The fill tower shall be fitted with an integral 4" ID, Schedule 40 PVC combination overflow/vent pipe running from the fill tower through the tank to a 4" coupling flush mounted into the bottom of the tank to allow water to overflow beneath the chassis.

TANK TO PUMP

The tank to pump piping shall be capable of delivering water to the pump at a rate of five hundred (500) gallons per minute. This flow shall be sustained while pumping to a minimum of 80% of the certified tank capacity with the apparatus on level ground. No exceptions are allowed to this section.

The tank to pump line shall run straight, without elbows, from the pump to the front face of the water tank and down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing. The tank to pump line shall be plumbed with 3" Schedule 40 stainless steel high pressure pipe.

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A 3" ball valve shall be furnished from the tank to the pump complete with a flexible connection and shall be enclosed in the pump compartment. The 3" valve shall be stainless steel and have an interior stainless steel ball and shall have a locking manual control handle located on pump operator's panel. A built-in check valve shall be provided in the tank to pump supply line to prevent the unintentional back filling of the water tank through the line.

TANK REFILL

A 2" tank refill line shall be provided using a 2" quarter-turn full flow ball valve controlled from the pump operator's panel with a manual locking handle. The tank refill shall be plumbed with high pressure flexible piping and high pressure flexible piping stainless steel couplings.

TANK SUMP AND CONNECTIONS

There shall be one (1) sump standard per tank. The sump shall have a minimum 3" FNPT threaded outlet on the bottom for a drain plug. This shall be used as a combination clean out and drain. All tanks shall have an anti-swirl plate located above the dip tube.

There will be two (2) standard tank outlets: one for tank to sump suction line, and one for a tank fill line. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1,000 GPM. All auxiliary outlets and inlets must meet N.F.P.A. 1900 guidelines in effect at the time of manufacture.

TANK MOUNTING

The tank shall be mounted on the aerial torque box and shall be insulated from the torque box with hard rubber insulators. The tank shall be designed on the free-floating suspension principal and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure.

EXTERNAL FOAM TANK

A thirty (30) gallon polypropylene foam concentrate tank shall be furnished.

The foam tank shall be plumbed to the on board "Class A" foam system. A drain valve shall be provided at the lowest point of the foam tank. The foam tank shall drain shall directly to the surface below the apparatus without contacting other body or chassis components. The following labels shall be attached to the foam tank:

"CLASS A FOAM TANK FILL"
"WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM"

TANK MOUNTING

A tank mounting cradle shall be supplied. The tank is designed on the free-floating suspension principal and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The water tank cradle shall be designed to be completely independent of the apparatus body to eliminate torsional stress loading in the body.

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APPARATUS BODY DESIGN AND CONSTRUCTION

The apparatus body shall be built of stainless steel and shall be designed exclusively for Fire Service use. The overall body width shall be 100 inches wide and shall be constructed in accordance with current NFPA requirements. All metal work shall be free of sharp edges, objects or corners. No exceptions are allowed to this requirement.

The pump module is to be completely separate from the main body to prevent damage due to flexing.

BODY MOUNTING SYSTEM

The body shall be mounted so the chassis can flex without damage occurring to the body structure or sheet metal.

REAR FRAME EXTENSION

The rear chassis frame extension system shall consist of a interwoven dual .625" thick steel drop frame extensions with a transverse 4" x 3" x .375" thick structural channel, and dual laminated .188" thick rear compartment and tailboard support tapered angles on each side of apparatus.

The rear frame extension shall be bolted to the chassis frame utilizing Grade 8 bolts and Grade C locknuts with hardened washers. For ease in replacement of damaged components in an accident there shall be no welding of components to the chassis frame.

Two (2) tow eyes with an eye diameter of not less than 3.5" shall be attached directly to the chassis frame extensions. The tow eyes shall be fabricated of .625" thick steel.

COMPARTMENT DESIGN AND CONSTRUCTION

All compartments shall be manufactured from 12-gauge stainless steel with the vertical front and rear corner walls from 14-gauge, shall be of sweep out design and shall be bolted together. Stainless recessed round head bolts and stainless aircraft style "ESNA" nuts shall be applied with proper torque rating for each fastener. This type of construction shall greatly enhance the strength and ease of parts replacement in the event of damage and future modifications. Wherever possible, body bolts shall be hidden from plain view for appearance and ease of apparatus cleaning.

COMPARTMENT ROOF CONSTRUCTION

Each compartment top shall have a 12-gauge stainless roof section for supporting roof loads of up to 500 pounds per square foot without permanent roof deformation. The stainless roof sections shall attach the compartment rear wall and compartment vertical sides through a fastened joint creating a full perimeter compartment attachment of the stainless roof section.

COMPARTMENT ROOF - TRIM CAP

A bright finished aluminum diamond plate cap shall be provided on the upper body. The diamond plate cap shall wrap the outer edges of the body, with a drip edge over the compartment door area.

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COMPARTMENT VENTILATION

Each compartment shall be provided with a laser cut louver to provide adequate ventilation.

COMPARTMENT DIMENSIONS

All compartment dimensions are approximate and will vary with manufacturers. It is desired have as much compartmentation as possible. Bidder must state the sizes and cu.ft. of each compartment bid.

Left Side

There shall be one (1) high side full depth compartment above the front outrigger. It shall have the approximate dimensions of 31" wide x 33" high x 24" deep.

There shall be one (1) rescue style, full height, and full depth compartment ahead of the rear wheels. It shall have approximate dimensions of 51" wide x 63" high x 24" deep.

There shall be one (1) high side full depth compartment ahead of the tandem centerline. It shall have approximate dimensions of 53" wide x 33" high x 24" deep.

There shall be one (1) high side full depth compartment behind the tandem centerline. It shall have approximate dimensions of 51" wide x 28" high x 24" deep.

There shall be one (1) rescue style, full height, and full depth compartment behind the rear wheels. It shall have approximate dimensions of 27" wide x 58" high x 24" deep.

There shall be one (1) high side full depth compartment above the rear outrigger. It shall have the approximate dimensions of 28" wide x 28" high x 24" deep.

Right Side

There shall be one (1) high side full depth compartment above the front outrigger. It shall have the approximate dimensions of 31" wide x 33" high x 24" deep.

There shall be one (1) rescue style, full height, and full depth compartment ahead of the rear wheels. It shall have approximate dimensions of 51" wide x 63" high x 24" deep.

There shall be one (1) low side full depth compartment behind the rear wheels. It shall have approximate dimensions of 27" wide x 30" high x 24" deep.

There shall be one (1) low reduced depth compartment behind the rear outrigger. It shall have the approximate dimensions of 18" wide x 30" high and 12" deep. This compartment shall be equipped with a slam door for maximum compartment utilization.

ROLLUP DOORS

All compartments shall be provided with a roll up door that shall be constructed of double sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1-3/8" wide x 3/8" thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slat to insure a weather tight

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seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end.

The door latch shall be a non-locking stainless steel lift bar and shall be provided with a magnetic door ajar switch system.

A Roll-Up door shall also be furnished on the ladder compartment.

FENDER SIDE SKIRTS

There shall be stainless steel fender side skirts located in the area of the rear wheels. The design of the fender sides shall be a minimal length to provide maximum compartment space in the apparatus.

SCBA BOTTLE COMPARTMENTS

Eight (8) SCBA bottle tube compartments shall be provided, four (4) in each side rear wheel well area. Two (2) shall be located forward and two (2) located rearward of each tandem axle tire. Each compartment shall be provided with a hinged, cast aluminum door with a brushed finish.

FUEL FILL - REAR BODY

The fuel fill shall be located in the rear on the left side of the apparatus body. The spring loaded fuel fill door shall have "Diesel Fuel" laser cut in the face of the door. There shall be a vent line from the fuel tank to beneath the fuel cap to aid in fueling of the truck.

BODY FENDERS - POLISHED

The apparatus body fenders shall be made from 16 gauge polished stainless steel and shall be rolled, die stamped and fully removable. The stainless steel fenders and stainless fender liners shall be fastened with stainless bolts and ESNA nuts to the outer fender panel.

REAR AXLE MUD FLAPS

Two (2) black, anti-sail, mud flaps shall be mounted behind the rear wheels.

LONGITUDINAL APPARATUS BODY HOSEBED

There shall be a longitudinal hosebed furnished above the exterior right side lower body side compartments. The hosebed shall be constructed in such a manner that shall prevent damage to fire hose. The hosebed shall comply with the current NFPA requirements. The interior of the hosebed shall be free of projections such as nuts, sharp edges or brackets that may damage hose. The hosebed and walls shall be manufactured from stainless steel.

An aluminum extrusion shall be installed over the rear opening of the hosebed to protect the body from wear. The hosebed bottom shall be fitted with removable slatted, ribbed 6" heavy-duty extruded aluminum floorboards.

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HOSE CAPACITY REQUIEMENTS

The hose bed shall be designed to carry 800 to 1,000’ of 5” LDH and 400’ of 3” hose

ADJUSTABLE HOSE BED DIVIDERS

One (1) adjustable hosebed dividers shall be provided. Each divider shall be fabricated from .250" thick smooth aluminum plate, 5052-H32 alloy.

A one-piece polished aluminum treadplate hosebed cover shall be supplied and shall extend the full length and width of the main hosebed. The hosebed cover shall be constructed of .125" polished aluminum treadplate with cross bracing to provide maximum strength and rigidity to support the weight of a firefighter standing on the cover when closed. The aluminum treadplate shall meet the current revision of NFPA 1901 for step requirements.

The cover shall be equipped with a full length stainless steel piano hinge and chrome plated grab handles at the front and rear of the cover. The hosebed cover shall include a heavy duty stop to support it when placed in the open position.

REAR VINYL FLAPS FOR ALUMINUM COVER

There shall be one (1) black vinyl flap attached to each aluminum hosebed cover. The vinyl flaps shall cover the area at the rear of the hosebed from top to bottom. The flaps shall be independent of each other and shall be attached with Velcro fastenings. The bottom edge of each flap shall be weighted and also have an eyelet on each outer corner.

The hosebed cover rear flap shall have a positive locking device to meet the requirements of NFPA.

TURNTABLE ACCESS STEPS

There shall be a recessed egress ladder furnished on the left rear of the body for access to the aerial turntable assembly. The egress ladder shall have non-slip type, 18” wide illuminated steps and shall have a full length handrail furnished on each side of the egress ladder to aid in ascending and descending the access steps.

If a pull-out or flip-down lower step is furnished to ascend or descend the ladder, an indicator shall be furnished in the cab to alert the driver the step in not stowed.

EXTERIOR REAR BODY

The exterior rear portion of the body above and on each side of the RR1 door shall be covered with aluminum treadplate.

BODY RUBRAIL - POLISHED STAINLESS STEEL

The apparatus body shall have a bolt on extruded, polished stainless steel rub rail affixed to the side beneath each door area. The rub rail shall provide additional strength and protection and shall be constructed of 3/8" x 1-1/2" stainless steel fastened with stainless steel fasteners. Each rub rail shall be attached to the apparatus body with stand off spacers made from 1" diameter UHMW Polyethylene bar stock.

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EXTERIOR COMPARTMENT LIGHTING

LED lights shall be furnished on both sides and top of door opening of all compartments including ladder compartment.

UNDERBODY LIGHTING

Underbody ground lights shall be provided under the apparatus body as required by current NFPA 1901. Four (4) Truck-Lite model #60 ground lights shall be provided at the rear of the apparatus body, two (2) each side, to illuminate under the rear compartments.

There shall also be two (2) model #40 ground lights provided at the outer front corners of the apparatus body, one (1) each side, to illuminate the area under the forward compartments and pump panel areas. All underbody ground lights shall be switched on when the parking brake is set and the apparatus is running with the master battery switch in the "ON" position.

FOLDING STEPS

Three (3) folding steps shall be provided on each side of the front of the body per NFPA requirements.

REAR TAILBOARD

A rear tailboard 8" deep shall be provided at the rear from aluminum treadplate meeting NFPA 1901 step requirements. The tailboard shall provide protection for the rear body compartments and shall provided recessed mounting for the rear ICC marker lights. It shall be bolted to the rear support structure.

REAR HANDRAILS

Two (2) ribbed, 1-1/4" diameter, aluminum handrails with chrome plated stanchions shall be supplied and installed at rear of the apparatus body, one (1) on each side adjacent to the rear compartment door.

One (1) ribbed, 1-1/4" diameter, aluminum handrails with chrome plated stanchions shall be supplied and installed on each side at rear of the apparatus body.

REAR TOW EYES

Two (2) heavy duty fabricated painted steel tow loops shall be provided on the rear of the chassis frame rails extending through the rear of the body below the torque box compartment. The loops shall be manufactured from a minimum of 1-1/4" thick 50,000 psi yield material and shall have a 3" interior diameter hole to allow for the use of a tow chain end hook. The loops shall be attached to the frame rail with a minimum of four (4) Grade 8 fasteners on each loop.

HOSEBED FLOODLIGHT

One (1) Unity AG hosebed floodlight shall be mounted at the front right corner of the hosebed. The light shall be controlled from a water proof switch on the lamp head.

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BACKBOARD

One (1) Pro-Lite model PL-ONP, orange polyethylene backboard shall be provided and located in the apparatus body.

OUTRIGGER COVER PANELS

Each out and down outrigger shall have a brushed stainless steel cover attached to the outer face. The cover shall fit flush with the apparatus body when the outriggers are fully stowed.

OUTRIGGER WARNING LIGHTS

Four (4) red LED warning lights shall be mounted one on each out and down outrigger cover panel. These lights shall activate when the outriggers are placed into motion.

DEEP ALUMINUM SHELVES - ADJUSTABLE

Four (4) adjustable aluminum shelves shall be furnished and installed and shall have a flange 1-1/2" deep will be mounted in 24” deep compartments. Each shelf shall be adjustable in height and held in place by four (4) extruded uprights.

ALUMINUM TRAY - PULL OUT

One (1) heavy duty pullout tray shall be installed on the floor of the compartment and shall be equipped with Grant slides and a gas shock to hold the tray in both the in and out positions and shall be made from .190" aluminum with a maximum capacity of 500 pounds.

ALUMINUM TRAYS - PULL OUT AND DOWN

Two (2) pullout and down trays shall be installed and shall be constructed of formed .190" aluminum with a maximum capacity of 250 pounds. Each extrusion shall include a specially sized channel at both sides of the drawer for the installation of two (2) high quality stainless steel ball bearing rollers. These bearings shall provide support the outside front of each tray. A second set of stainless steel ball bearing rollers shall be provided for the inside rear of each tray. These rollers shall be bolted to the rear of each drawer and shall slide on two (2) extruded aluminum tracks that are angled to provide an "out and down" action of each tray. Each drawer slide mechanism shall be mounted in Unistrut "C" channels to allow for future adjustment and removal.

FULL HEIGHT PULL OUT VERTICAL TOOL BOARD

One (1) full height vertical pull out tool boards shall be installed in an exterior body compartment.

Each board shall be equipped with Grant slides and a gas shock to hold the board in both the in and out positions.

The tool board shall be made from .25" aluminum and be fully adjustable across the width of the compartment.

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TOOL BOX

A 20" long by 8" wide stainless steel toolbox with a top removable tray shall be provided with the apparatus. The tool box shall be supplied with a logo of the truck manufacturer applied to the lower left front corner of the box.

APPARATUS BODY ELECTRICAL SYSTEM

All body electrical shall conform to NFPA 1901 latest edition standards. The apparatus shall be equipped with a heavy-duty 12-volt negative ground system.

All 12-volt apparatus wiring shall pass through a heavy duty power disconnect solenoid. The 12-volt control of the power disconnect switch is to be triggered by the Master Battery Disconnect.

The apparatus shall be equipped with a Class1 Es-Key Management System or an approved equal, for complete control of the electrical system devices.

The right rear compartment shall house a relay based Power Distribution Module (PDM). The PDM shall contain 12 standard automotive relays. Each relay's output shall be monitored by the Es-Key system to provide true on/off feedback. Each output shall be capable of handling up to 30 amps and be protected by an automatic circuit breaker. The PDM shall be mounted on a removable panel in the left rear compartment with sufficient harness length to allow a technician the ability to remove the PDM and place it on a compartment shelf for diagnostics and service.

All wiring shall be color-coded and function coded to assist the technician in servicing the electrical system. All circuits shall be divided and balanced for proper load distribution. Where possible, wiring shall be routed in looms as a single harness. Heat resistant convoluted loom shall be used. Only solderless, insulated crimp automotive electrical connectors shall be used.

CAB ICC MARKER LIGHTING

Five (5) amber Whelen OS Series LED cab face mounted clearance lights shall be supplied, mounted above the windshield. These lights are to be mounted in a chrome flange.

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted ahead of the front door. These lights are to be mounted in a chrome flange.

An amber diamond shaped reflector shall be mounted on the lower corner of each cab front door adjacent to the door hinge.

APPARATUS ICC MARKER LIGHTING

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted ahead of the forward body compartment. These lights are to be mounted in a chrome flange.

Five (5) red LED clearance lights shall be supplied, mounted in the rear of the apparatus.

Two (2) red LED clearance lights shall be supplied, mounted facing the side of the apparatus.

ICC lighting utilized and lighting positions shall be in conformance with FMVSS 108.

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SIDE MOUNTED TURN SIGNAL LIGHTS

Two (2) Whelen, model RSA02ZCR, linear amber LED turn signal lights shall be provided mounted one each side in the front wheel well area. The lights shall be mounted in a chrome flange.

REAR STOP/TAIL/TURN/BACKUP LIGHTS

The rear of the apparatus shall be equipped with 6"x4" LED lights. The top light in the assembly shall be a red LED stop/tail light. The middle light set shall be an amber LED lamp with a populated arrow shape, and the lower lights shall be clear LED backup lights.

A one-piece polished aluminum trim casting shall be mounted around the rear stop/tail/turn and backup lights on each side of the apparatus.

SIDE MOUNTED TURN SIGNAL LIGHTS

Two (2) Whelen, model RSA02ZCR, linear amber LED turn signal lights shall be provided mounted one each side in the rear wheel well area. The lights shall be mounted in a chrome flange.

BACK-UP ALARM

A solid state electronic backup alarm shall be installed on the rear of the apparatus and wired to the backup light circuit.

Additionally the backup lights shall be activated when the parking brake is set.

One (1) license plate mounting bracket and incandescent light shall be provided. The light and bracket shall be located on the rear of the apparatus.

BACKUP CAMERA

There shall be an ASA Audiovox, or equal, video system provided on the apparatus.

The color monitor shall be an ASA AOM713WP. The 7 inch color LCD monitor contains a water proof housing, circuit protection, backlit controls, integrated audio speaker, NTSC and PAL video signal compatible, 3-camera inputs, manual (pushbutton) or automatic (trigger) source selection, auto power on (standby) day / night brightness modes, on screen display (OSD) for AV source, picture adjustment and volume level, non volatile memory for picture and volume adjustment settings, anti-glare / anti-scratch protective lens, detachable sunshield.

The monitor for the back-up camera shall be mounted on top of the engine doghouse within view of the driver to aide in backing up the apparatus.

The back up camera system shall be powered with the ignition power in the cab. Operation of the camera will be by the driver with the monitor controls.

There shall be supplied a black & white, heavy duty high resolution observation camera, ASA Model VBCS150B. The camera shall have a black housing, built-in microphone, enhanced low light performance (0.5 LUX LED assisted), image orientation selector switch, and locking waterproof cable connector. The camera shall have a non corrosive mounting bracket and stainless steel hardware.

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The back up camera shall be mounted at the rear of the apparatus beneath the hose bed.

TURN SIGNALS

Two (2) rectangular LED turn signal lamps shall be mounted in a polished aluminum bezel outboard of the front headlights on each side. These lights shall be amber in color.

ROOF MOUNTED LIGHTBAR

A dual Whelen Freedom model FNMINILED, 24" light bar system shall be supplied and permanently mounted on the cab roof, as far forward as possible. This light bar system shall be supplied with four (4) LED elements, two (2) front corner red, one (1) clear front and one (1) end red.

This light bar fulfills the requirements for Upper Zone A and in combination with the upper rear warning devices fulfills the requirements for Upper Zones B, C, and D. Any clear warning light(s) in the light bar shall be disabled automatically for the “Blocking Right of Way” mode.

CAB SIDE FACING ROOF MOUNTED LIGHTBAR(S)

One (1) Whelen Freedom, model FNMINILED, 24" light bar shall be mounted parallel to the frame rails on the driver’s side on the cab roof .

One (1) Whelen Freedom, model FNMINILED, 24" light bar shall be mounted parallel to the frame rails on the officer’s side on the cab roof .

Each light bar shall be supplied with four (4) LED elements, two (2) front corner red, one (1) clear front and one (1) end red. This light bar system fulfills the requirements for Upper Zone A and in combination with the upper rear warning devices fulfills the requirements for Upper Zones B, C, and D. Any clear warning light(s) in the light bar shall be disabled automatically for the “Blocking Right of Way” mode.

The light bar(s) shall be mounted over the driver and officer's doors.

LOW LEVEL WARNING LIGHTS

Four (4) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted on the front of the chassis above the headlights, in a second headlight style module, located in the inner position on each side.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left light head.

These lights fulfill the requirements for Lower Zone A lower level warning devices.

Warning light lenses shall be red in color.

FRONT INTERSECTION LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted one (1) on each side of the front bumper/gravelshield with a Whelen chrome plated flange.

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The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Lower Zone B & D lower level warning devices.

Both warning light lenses shall be red in color.

CAB SIDE WARNING LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted one (1) on each side of the cab over the front wheel with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Lower Zone B & D lower level warning devices.

Both warning light lenses shall be red in color.

BODY SIDE WARNING LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted one (1) on each side of the body over the rear wheel with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Lower Zone B & D lower level warning devices.

Both warning light lenses shall be red in color.

REAR UPPER LEVEL WARNING LIGHTS

Four (4) Whelen warning lights, 400 Series, Super-LED light heads shall be mounted on the upper rear of the apparatus with a Whelen chrome plated flange.

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted on the upper rear sides of the apparatus with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for all light heads.

These lights fulfill the requirements for Upper Zone B, C & D upper level warning devices.

All warning light lenses shall be red in color.

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REAR LOWER LEVEL WARNING LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted on the rear of the apparatus below the taillights at the lower outermost corners in vertical position with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Upper Zone C lower level warning devices.

Both warning light lenses shall be red in color.

LED TRAFFIC ADVISOR

One (1) amber LED Whelen traffic advisor, model TAM-85, with cable, shall be mounted on the upper rear of the apparatus. The device shall consist of eight Super-LED heads.

The signal patterns of the device shall be progressive left, progressive right, center out, and emergency "All Flash."

The switch control box is to be mounted in the cab allowing for easy operation by the driver.

ALTERNATING HEADLIGHT WARNING

The headlights shall be provided with an alternating headlight feature.

When the High Beam is selected the headlights shall become a standard high beam.

Any clear warning light(s) shall be disabled automatically for the "Blocking Right of Way" mode.

A cut off switch shall be supplied to turn off the alternating headlight function.

IDENTIFICATION AND SAFETY LABELS

A permanent plate shall be installed in the driver's compartment to specify the quantity and type of the following fluids in the vehicle:

1. Engine oil.
2. Engine coolant.
3. Transmission fluid.
4. Pump Transmission Lubrication Fluid.
5. Pump Primer Fluid (If applicable).
6. Drive Axle Lubrication Fluid.
7. Air-conditioning refrigerant.
8. Air-conditioning lubrication oil.
9. Power steering fluid.
10. Transfer case fluid.
11. Equipment rack fluid.

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12. Air compressor system lubricant.
13. Generator system lubricant.

A permanent plate with pump performance data and serial numbers shall be installed on the pump panel.

A permanent plate shall be installed in the driver's compartment specifying the maximum number of personnel the vehicle is designed to carry per NFPA standards. It shall be located in an area visible to the driver.

An accident prevention sign stating "DANGER PERSONNEL MUST BE SEATED AND SEAT BELTS MUST BE FASTENED WHILE VEHICLE IS IN MOTION OR DEATH OR SERIOUS INJURY MAY RESULT" shall be placed so it is visible from all seating positions.

An accident prevention sign stating "DANGER DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION, DEATH OR SERIOUS INJURY MAY RESULT" shall be placed so it is visible from the rear step of the vehicle.

If an inlet located at the pump operators position is valved, it shall be provided with a permanent label with language per NFPA-1901, current edition.

WHEEL CHOCKS

One (1) pair of heavy duty, high tensile molded aluminum wheel chocks measuring 7.75" high x 8.5 wide x 15" long shall be provided with the apparatus. The wheel chocks shall have a bright yellow powder coat finish for high visibility, safety and corrosion resistance. No exception shall be allowed to these requirements.

Two chock holders shall be provided and mounted on the left side of the apparatus below the front body compartment.

RADIOS

A Motorola model M28URS9PW1 M XTL 1500 mobile radio must be furnished and installed, along with a G809 Analog, W484 3db Antenna, B-18 Speaker, G24 Two year Repair Service and Radio Programming.

A Motorola 16 channel VHF radio furnished and installed with antenna, speaker, programming.

CHASSIS PAINT

NOTE: Paint systems and applications will vary between manufacturers. Bidder shall furnish a top quality Urethane paint ie. DuPont Imron

The frame and running gear shall be painted gloss black enamel. The running gear shall consist of the axles, drivelines, air tanks, steering gear, frame mounted brackets, draglinks, and fuel tank.

The air system piping and electrical harnesses shall not be installed in the frame at the time of the frame painting. This shall insure complete coverage of paint behind those areas, as well as to insure that the air piping and wiring harnesses do not have paint applied to them, hindering troubleshooting.

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INTERIOR FINISH

The interior of the cab shall be painted with spatter paint, textured gray in color. The spatter paint is selected for ease of repairs when the interior is scratched.

The exterior doors and all fixed cab glass is to be removed from the cab prior to the painting process beginning.

The cab metal finish shall be covered with base self-etching primer to fill the small surface imperfections.

Then the interior of the cab is to be blocked and a coat of sealer-primer is to be sprayed to the exterior finish.

Next a sealer-primer is applied and will be sanded to a smooth finish ready for final color coat application.

Two (2) coats of finished paint are to be applied to a final thickness of 4 mills.

The following interior components shall be black in color:

Sun visors
Cab interior overhead console
Interior flooring material of the cab

The following interior components shall be gray in color:

Interior headliner of the cab
Engine Enclosure console
Engine enclosure covering material in the cab
Rear wall covering of the cab

CAB EXTERIOR FINISH

The exterior doors and all fixed cab glass are to be removed from the cab prior to the paint and body process beginning.

The single color, final finish of the cab shall be to fire apparatus standards; exhibiting excellent gloss durability and color retention properties.

NOTE:

Preparation, Preclean, Pretreat, Primers and Finish Coats shall be done at the paint manufacturers recommendations and direction.

Paints: Approved paints are PPG and DuPont others may be considered.

TORQUE BOX PAINTING

The torque box shall be properly cleaned and prepared for final painting process. The torque box shall be painted with two (2) coats of black paint.

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AERIAL DEVICE PAINTING

Before assembly, in preparation for the final painting, the aerial ladder sections and turntable shall be thoroughly cleaned and prepared to conform to good painting practices. The aerial ladder sections and turntable shall be primed with two (2) coats of PPG or equal lead free primer. Ladder sections and turntable shall then be sprayed with one (1) coat of color using PPG 2185 paint.

The color of the ladder sections shall be determined.

PAINTING -- PLATFORM BASKET

Before assembly, in preparation for the final painting, the platform basket shall be thoroughly cleaned and prepared to conform to good painting practices. The basket shall be primed with two (2) coats of PPG or equal lead free primer and then shall be sprayed with one (1) coat of PPG or equal paint.

The platform basket shall be painted same color as ladder sections.

STAINLESS STEEL APPARATUS BODY PAINTED

The following apparatus body components shall be painted job color.

The rear wheel fender panels
The front body corner panels
The area between the doors on the side compartments
The exterior surface of the hosebed side walls / coffin compartment

LETTERING

The lettering shall be done in 24 karat gold leaf and shall be to the direction of the fire chief. All lettering must be done by East Coast Artie's in Surfside Beach, SC.

REFLECTIVE SAFETY STRIPE

A 4" wide 3M brand Scotchlite reflective stripe shall be affixed to the perimeter of the vehicle. The striping shall be placed up to 60" above ground level and shall conform to NFPA reflectivity requirements. At least 60% of the perimeter length of each side and width of the rear and at least 25% of the perimeter width of the front of the vehicle shall have reflective stripe.

FORWARD DOOR "RIBBON" PATTERN

The stripe on each side of the apparatus shall run straight back to the forward door on the body, with a "Ribbon" pattern shape on the forward body door and then run straight back from there to the rear of the body.

BODY STRIPE UP AND OVER REAR AXLE

The stripe on each side of the apparatus shall run straight back to the body, then angle up at approximately a 45 degree angle on the front body door and then run straight back from there to the rear of the body.

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REFLECTIVE STRIPE COLOR

The apparatus body striping shall be Black reflective.

REAR REFLECTIVE CHEVRON STRIPING

Red and bright yellow reflective chevron striping shall be provided and applied to the rear area to the area beneath the ladder door, behind the taillights and part way up the roll up door sides. The stripes shall be 4" wide and shall alternate red and bright yellow. The chevron pattern shall angle up from the outer edges toward the center of the rear body.

WARRANTIES

The following warranties shall be considered as minimum.

CHASSIS

The cab and chassis proposed, to be free from defects in material and workmanship under normal use and service for a period of one (1) year from date of delivery to Surfside Beach. This warranty shall cover the cost for parts and labor for this period of time. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

CAB STRUCTURAL

The cab proposed shall not be structurally damaged inside or out by rust and/or corrosion for a period of ten (10) years. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

CAB CORROSION

The cab shall have a ten (10) year cab corrosion perforation warranty according to the terms and conditions outlined in the warranty statement.

FRAME

The proposed frame against structural failure from bending or cracking for the entire period the chassis is owned by the original purchaser or end-user. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

ENGINE

The engine shall have the standard 5 year warranty from the engine manufacturer that is in effect at the time of the vehicle is placed into service.

TRANSMISSION

The chassis shall have a five (5) year unlimited mileage as defined in the Allison New Product Warranty.

MERITOR/ROCKWELL STANDARD AXLE

The Meritor/Rockwell axle shall have a five (5) year unlimited mileage parts and labor warranty that is in

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effect at the time of the vehicle is placed into service.

FIRE PUMP

The Hale fire pump shall carry the manufacturer's five year "Pro-Tech" warranty covering defective parts and workmanship. A copy of the pump manufacturer's warranty policy shall be provided with the completed apparatus.

STAINLESS PIPING

The bidder shall warrant that all stainless steel plumbing components used in the construction of the fire apparatus water/foam plumbing systems against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of ten (10) years from the date of delivery to the original user-purchaser, whichever occurs first.

WATER TANK

The water tank is to be free from defects in material and workmanship for the normal service life of the apparatus in which the water tank is installed.

If a tank has a defect in material or workmanship covered by the warranty, the tank manufacturer shall repair at their cost, by authorized personnel or authorized third parties. The tank manufacturer shall make an effort to effectuate repair within 48 hours following initial notification of a covered defect. The tank manufacturer shall make a reasonable effort to repair tank at most convenient location to end user.

The tank manufacturer shall reimburse all reasonable costs associated with rendering the tank accessible for repair, including, but not limited to, removal and reassembly of the hose bed floor.

BODY STRUCTURAL

The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the apparatus body manufactured by the bidder (the "body"), under normal use and with normal maintenance, will remain free from structural defects for a period of twenty five (20) years from the date that the motor vehicle was first placed in service. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

BODY CORROSION

The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the apparatus body manufactured by the bidder (the "body"), under normal use and with normal maintenance, will remain free from corrosion for a period of twenty (20) years from the date that the motor vehicle was first placed in service. A body shall be considered to have "corrosion defects" if it is found by the bidder to have perforation caused by corrosion under normal use and with normal maintenance. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

CAB AND BODY PAINT

The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the painted apparatus cab, shall under normal use and with normal maintenance remain free

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from paint defects for a minimum period of five (5) years from the date that the motor vehicle was first placed in service. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

OVERALL AERIAL WARRANTY

The manufacturer shall provide a one (1) year or 100,000 miles overall parts and labor warranty as follows: The aerial manufacturer shall warrant to the purchaser that the complete aerial device and system was manufactured to comply with the manufacturer's bid specifications and free in all respects from any defects in materials or workmanship.

The warranty shall expire on the earlier of one (1) year or 100,000 miles from the date of delivery and acceptance of the apparatus. This warranty shall include all parts and labor.

AERIAL STRUCTURAL WARRANTY

The aerial ladder sections shall carry a warranty against structural failures caused by defective design or workmanship for a period the earlier of twenty (20) years or 100,000 miles. This warranty shall commence on the date vehicle is accepted by the original purchaser.

AERIAL OUTRIGGERS/STABILIZERS -- CORROSION PROTECTION WARRANTY

A corrosion protection warranty shall be provided for the aerial outriggers and stabilizers for a period of twenty-five (25) years. The conditions of the corrosion protection warranty shall be as follows.

OTHER WARRANTIES

Applicable extended warranties for certain major chassis components such as the axles, engine, transmission, apparatus body, tank, pump and related components, etc. shall be submit with their proposal a copy of the warranty to be furnished.

SPECIFICATIONS FOR PUMPER APPARATUS

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INSTRUCTIONS TO BIDDERS

Bidders are requested to read the complete bid invitation carefully and submit their proposals in strict accordance with the requirements set forth.

Any questions regarding this specification must be submitted in writing via E-mail to Fire Chief Packard at rpackard@surfsidebeach.org a minimum of ten (10) business days prior to the bid opening date. Clarifications, corrections and/or changes shall be sent out in writing via E-mail to all prospective bidders.

The purchaser reserves the right to reject any or all bids or accept any bid presented which meet or exceed these specifications and which the purchaser may deem shall be in the best interest of the City regardless of the amount proposed.

The complete apparatus shall be manufactured within the continental United States. Vehicles manufactured outside of the continental USA shall not be considered. No exceptions will be permitted to this section of the document.

Any items that are standard on a manufacturer's apparatus that are not listed in these specifications shall be furnished.

PURCHASE INTENT

It is the intent of these specifications to describe a Custom Cab Pumper to be used in the Town of Surfside Beach, South Carolina

It is the intent of these specifications to describe the furnishing and delivery of a Custom Cab Pumper to the Town of Surfside Beach, SC. With a view to obtaining the best results and the most acceptable fire apparatus for service in the Surfside Beach Fire Department, these specifications cover only the general requirements as to the type of construction and test to which the vehicle must conform, together with certain details as to finish, equipment, and appliances with which the successful bidder must conform. Details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all non-specified features. The completed vehicle shall conform to the requirements of the National Fire Protection Association Pamphlet No. 1901, latest edition, for Motor Fire Apparatus, and shall exceed 1901 where specified herein for all applicable equipment noted.

When evaluating bids, the importance of reduced life cycle costs and public safety associated with fire fighting apparatus shall be a major consideration and all evaluations shall exclude vehicles of a type that deviate from these specifications.

Apparatus with a design that utilize a commercial bus or truck chassis with the installation of a custom cab will not be accepted.

Proposals shall only be considered from manufacturers that have an established reputation in the field of fire apparatus construction and have been in continuous business for a minimum of thirty-five (35) years. A written chronological history of the bidder shall be included in the bid response package.

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Each bidder shall state the location of the factory where the chassis and body shall be built. They shall also state the location of the factory authorized dealer/service facility that is in a position to render prompt repair service and to furnish replacement parts for said completed apparatus.

The workmanship must be of the highest quality in its respective field. Special consideration shall be given to the following points:

1) Accessibility of the various components which require periodic maintenance or lube checks.
2) Ease of vehicle operation.
3) Visibility of the driver.
4) Features supplied that are beneficial to the intended operation of the completed apparatus.

Construction must be rugged and design must be certified to carry the loads as specified and to meet the road requirements and speed conditions as set forth under "Performance Test and Requirements".

Welding shall not be employed in the assembly of the completed vehicle in a manner that shall prevent the removal of a major component part for service and/or repair.

These specifications have not been established to preclude any bidders. However, the purchaser does not intend to make a decision solely based upon lowest price as determined by the US Supreme Court ruling "Paddock vs. Whitten" but intends to purchase an apparatus that meets the intentions, service, and needs of the Surfside Beach Fire Department.

The apparatus being purchased is expected to have a 25 to 30 year service life. Based on this requirement, the department is extremely concerned that the apparatus remains structurally sound and the outward appearance remains in a “like new” condition, with minimal maintenance and upkeep, throughout the service life of the apparatus. Aluminum apparatus bodies and differing construction designs will be reviewed and considered only if the builder / manufacture will meet the same “Body Structural Warranty” requirements specified in this bid document.

DEVIATIONS FROM PROPOSAL REQUESTS

Any exceptions, deviations or areas the bidder exceeds the proposal requests shall be listed showing page number and heading and a detailed explanation.

MODEL TO BE PROPOSED

The model requested in the purchase description that follows is intended to be the "Top of the Line" model for the manufacturer. Sub-standard models that delete trim, functionality, service, and safety items shall not be acceptable. Proposals for manufacturers “Program” trucks will not be considered. A statement from the bidder shall be provided in the bid proposal that states that the chassis offered is the "Top of the Line" model from the manufacturer.

ROAD TEST CERTIFICATION

A road test shall be conducted with the finished apparatus fully loaded. During this time, the apparatus shall not show loss of power and/or overheating. The transmission driveshaft or shafts and rear axle shall run free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus, when

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loaded, shall have not less than 25% or more than 45% of the weight on the front axle and not less than 55% or more than 75% on the rear axle.

A. The apparatus must be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed RPM of the engine.
B. The apparatus must be capable of accelerating from a steady speed of 15 mph to a true speed of 35 mph within 30 seconds. This shall be accomplished without moving the gear selector.
C. The fully loaded apparatus shall be capable of obtaining a speed of 50 to 55 mph on a level concrete highway.
D. The manufacturer shall furnish copies of the engine installation approvals signed by the appropriate engine company upon delivery of the chassis to the Fire Department. No exceptions will be permitted to this section of the document.
E. The manufacturer shall furnish copies of the transmission approval signed by the transmission manufacturer upon delivery of the chassis to the Fire Department. No exceptions will be permitted to this section of the document.
F. The manufacturer shall furnish copies of the front and rear axle approvals upon delivery of the chassis to the Fire Department. No exceptions will be permitted to this section of the document.

ROAD TEST FAILURE

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may be made at the option of the manufacturer within thirty (30) days of the first trials. Such trials shall be final and conclusive and failure to comply with changes as the purchaser may consider necessary to conform to any clause of the specifications within thirty (30) days after notice is given to the manufacturer of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser, or its use by the Fire Department during the above specified period with permission of the manufacturer, shall not constitute acceptance.

INSPECTION TRIPS

One (1) inspection trips for up to four (4) Fire Department personnel each shall be made to the manufacturer's facility during the course of construction of the apparatus. Air travel (for distances over 250 miles), meals, and lodging expenses shall be included.

DRAWINGS REQUIRED

The Vendor shall submit two (2) copies of a D-size (full size) engineered construction drawings with it's bid. No bids will be considered without complete engineered construction drawings submitted with the bid. Submitted drawings must be specifically for the proposed apparatus and depict all major specified components.

These drawings shall show the following minimum views: front view; street side with proposed chassis; curbside with proposed chassis; rear view; top view with proposed chassis; hose bed height, and approach and departure angle.

The drawings shall contain the dimensions for the overall length (in feet and inches), overall height (in feet and inches), wheelbase, angle of approach, angle of departure, overall width of the apparatus, hose bed volume dimensions indicating the hose bed width, length, and height.

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Submission of "similar to" or "standard" drawings, or statements referencing submission of drawings after award of contract, will disqualify the bid.

APPARATUS FAMILIARIZATION

Fire Department personnel shall be instructed as to the use of the entire apparatus including, but not limited to, chassis, fire pump system, the apparatus, and supplied equipment.

The familiarization specialist shall remain at the Fire Department for one (1) days (not less than eight (8) hours), to provide instruction to all personnel, or as instructed by Chief of the Department. All meals, motel, and travel costs shall be the responsibility of the successful bidder.

NFPA 4.3.2 After delivery of the fire apparatus, the purchaser shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment as defined in NFPA 1002, Standard for Fire Apparatus Driver/Operator Professional Qualifications, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program.

DELIVERY DATA REQUIREMENTS

The manufacturer shall specify in his bid the number of calendar days after acceptance of the formal contract by the manufacturer, that the completed vehicle shall be delivered to Surfside Beach, SC. The manufacturer shall not be held liable for damages arising from its failure to make or delay in making deliveries because of fire, flood, riot, major component shortage, accidents, acts of God, or any circumstances beyond their control.

Information required at time of delivery to be supplied by the manufacturer:

A. Line set ticket showing parts used by the manufacturer in construction of the cab and chassis.
B. Electrical "as built" schematic booklet.
C. Air system "as built" schematic booklet.
D. Final build data sheet showing serial numbers for the following:
   1) Cab and chassis Vehicle Identification Number
   2) Engine
   3) Transmission
   4) Front axle
   5) Rear axle
   6) Each tire showing mounting location on the chassis.
   7) Apparatus Serial Numbers

E. Final build measurement data sheet showing the following:
   1) Bumper extension
   2) Wheelbase
   3) Rear overhang
   4) Cab measurements for the ground to the bottom of the cab at all four corners and the frame to cab extreme at the frame height for all four corners of the cab.
   5) Suspension measurements for the ground to the top of the frame at the centerline of the front axle and the centerline of the rear axle or centerline of the tandem axles.
   6) Overall Height, Length, and Width of completed body.

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F. A minimum of one (1) copy of complete, as delivered apparatus and chassis operation and general maintenance instructions including, but not limited to the chassis, engine, transmission, axles, and lubrication charts shall be supplied. A CD is preferred.

CHASSIS OPERATOR'S MANUAL

Operator's Manual w/Parts List - One Set shall be provided with the chassis.

An electronic Electrical System Manual shall be provided.

- This manual shall provide complete wiring schematics for the vehicle.

- The manual shall be provided with diagrams of the vehicle showing the wiring harness routing within the vehicle. Each of these diagrams shall include the connectors between the harnesses that provide a hyperlink to a drawing of the actual connector where pin functions can be examined.

- Schematics for each system of the vehicle shall be provided with hyperlinks to the connectors for pin designations and to the vehicle drawings for harness location within the vehicle.

An electronic Air System Manual shall be provided.

- This manual shall provide complete air system schematics for the vehicle.

- The manual shall be provided with diagrams of the vehicle showing the air tubing routing within the vehicle.

- Schematics for each system of the vehicle shall be provided with hyperlinks to the tanks and valves and to the vehicle drawings for exact location within the vehicle.

IN SERVICE WEIGHTS

The fully loaded, in service apparatus will be weight checked for proper axles and suspension. If the axles and suspension are deemed to small, the bidder, at his expense, will be required to make the necessary replacements and corrections.

CUSTOM CHASSIS - SINGLE SOURCE MANUFACTURER

The chassis shall be designed and manufactured by the apparatus builder in the manufacturer's facility. The manufacturer shall demonstrate evidence of manufacturing similar custom vehicles for at least thirty five (35) years.

Proposals shall only be accepted from a single source apparatus manufacturer. The definition of single source shall be "a manufacturer that designs and manufactures their products using an integrated approach, including the cab and chassis, pump module, and apparatus body being fabricated and assembled on the bidder's premises". The warranties relative to the chassis and body design (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body and chassis). The bidder shall provide evidence that they comply with this requirement. No exceptions will be permitted to this section of the document.

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The chassis shall be designed and manufactured for heavy duty fire service with adequate strength and capacity for all components as detailed within these specifications.

CHASSIS FRAME

The frame shall be designed to industry standards. The manufacturer shall provide a life time frame warranty to the original purchaser of the chassis.

The rails shall be 110,000 psi minimum yield and shall have a minimum section modulus of 16.50 cu. in. calculated by using the square corner shape method. The resulting frame rail resistance to bending moment shall be 1,950,000 in. lb. per rail.

To insure the maximum clamp load for the fastener prevailing torque the crossmembers shall be bolted in place using grade 8 bolts, hardened washers, and grade C distorted thread locknuts. Flanged head fasteners shall not be acceptable. The top of the frame rails shall be free of bolt heads.

The frame rails shall be powder coated prior to chassis painting to reduce the effect of harsh road chemicals.

FRONT BUMPER

A 10" high heavy-duty 10 gauge, polished stainless steel, wrap around, 2-rib front bumper shall be provided the full width of the cab.

BUMPER EXTENSION

The front frame extension shall be bolted directly to the main rail. The extension and main rail joint shall have a 3/8" thick side plate for reinforcement. The completed apparatus must be able to be lifted at the front bumper without structural damage to the front extension for towing of a disabled vehicle.

The front bumper face shall extend 21 inches ahead of the front face of the cab skin.

GRAVELSHIELD

A gravelshield shall be installed filling the area above the extension rails. This gravelshield shall be constructed of .125" thick NFPA non-skid, bright, non skid, aluminum treadplate. The gravelshield shall be supported at the front by the top flange of the stainless steel bumper. At the rear, the gravelshield shall be supported by a steel substructure.

CENTER HOSE REEL

A well shall be installed in the center of the gravelshield. The well shall be constructed of .125" aluminum. The upper edges of the hose well shall be tapered to allow for smooth, snag free removal of the hose. In the well shall be installed an electric rewind hose reel installed. One hundred Fifty feet of 1” Reel-Tex hose (One 100’ and One 50” sections) shall be furnished. An opening in the bumper for hose rollers shall be furnished to deploy the hose without opening the cover. The hosereel shall be mounted between the bumper extension rails.

A diamond plate hinged cover shall be furnished. A "D-Ring" handle shall be used to open the lid with a gas shock to hold the lid in the open position.

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TOW HOOKS

Two (2) chromed tow hooks shall be provided and shall be attached directly to the front frame extension under the bumper. These tow hooks shall be attached with two Grade 8 bolts with hardened washers and Grade "C" distorted thread locknuts.

FRONT AXLE

The front axle shall be a MERITOR axle with the minimum rated capacity of 18,000 lbs. The actual capacity shall be determined by the manufacturer. This to include the fully loaded vehicle, 1500 pounds of personnel and equipment in the cab, and 5,000 pounds of hose and equipment in the body and full tank of water and full tank of fuel.

CRAMP ANGLE

Due to the traffic, narrow streets and sharp corners the chassis turning radius is important, both left and right turns.

The bidder shall supply, with the bid, an engineering drawing that provides a top view of the apparatus with the following turning ability information listed in decimal feet: SAE turning radius, curb to curb radius, bumper swing radius, inside radius. The calculations must be performed according to SAE J-695.

FRONT AXLE OIL SEALS

The front axle shall be equipped with oil bath type oil seals as supplied on the axle from the axle manufacturer. The spindles shall be equipped with transparent covers for oil level inspection.

FRONT AXLE DISC BRAKES

MERITOR DiscPlus, EX-225, air disc brakes shall be installed on the front axle. The DiscPlus air disc brakes shall provide improved fade resistance and wet weather performance. The rotors shall be vented to facilitate brake cooling.

FRONT SUSPENSION

The front suspension shall be determined by the manufacturer based of calculated load and allowing a 10% overload factor.

Double acting hydraulic shock absorbers are to be installed.

STEERING SYSTEM

The steering shall be a single or double (if required) Ross or Sheppard integral power steering gear to provide easy effortless turning. The engine shall be equipped with a gear driven pump.

A remote steel reservoir shall be provided with the ability to check the fluid level when the cab is in the lowered position.

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FRONT TIRES

The front tires shall be 315/80R22.5-20PR (L) GOODYEAR G-291 all weather tread, tubeless radial tires. These tires shall be mounted on 22.5" x 9.00" polished aluminum rims with Dura Bright finish. Stainless steel “baby moon” hub cover and nut covers shall be furnished.

The front tire size shall be determined by the manufacturer in accordance with front axle load rating with a overload factor included.

SINGLE REAR AXLE

The rear axle shall be a MERITOR axle with the minimum rated capacity of 24,000 lbs. The actual load rating shall be determined by the manufacturer. This to include the fully loaded vehicle, 1500 pounds of personnel and equipment in the cab, and 5,000 pounds of hose and equipment in the body and full tank of water and full tank of fuel.

VEHICLE TOP SPEED

The rear axle shall be geared for a top speed of 65 to 68 mph at engine governed RPM.

AXLE DIFFERENTIAL LUBE

The axle shall have the initial factory fill made with non-synthetic axle lube meeting the axle manufacturer's recommendations.

REAR AXLE OIL SEALS

The rear axle shall be equipped with premium oil bath type oil seals as supplied on the axle from the axle manufacturer.

REAR AXLE DISC BRAKES

MERITOR/ROCKWELL DiscPlus, EX-225, air disc brakes shall be installed on the Meritor/Rockwell single rear axle. The DiscPlus air disc brakes shall provide improved fade resistance and wet weather performance. The rotors shall be vented to facilitate brake cooling.

SINGLE AXLE REAR SUSPENSION

The rear suspension shall have a rating of 27,000 lbs. Capacity. The rear suspension shall be a "self-leveling" slipper type with a main torque leaf that contains a military wrapper. The torque leaf shall contain a bronze bushing for long service life.

The actual suspension shall be determined by the manufacturer based of calculated load.

REAR SHOCKS

Dual heavy duty shock absorbers shall be installed on the rear suspension.

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REAR TIRES

The rear tires shall be a minimum of 11R22.5-16PR (H) GOODYEAR UNISTEEL G622 RSD traction tread, tubeless radial tires. All tires shall be mounted on 22.5" x 8.25" polished aluminum rims with Dura Bright finish with stainless steel "Lincoln Hat" hub cover and bright finished nut covers.

AIR SYSTEM

An air brake system meeting the requirements of the FMVSS-121 shall be provided. The total system shall consist of a minimum of 6,000 cu. in. air tank volume. The air system shall consist of the following components:

A quick build up system shall be provided, capable of building enough air pressure to release the spring brake in less than thirty (30) seconds, when starting with the entire air system at zero pounds pressure.

The brake system shall be a split system. One (1) system serving the rear brakes and one (1) system serving the front brakes. The two (2) systems shall be connected with a double check valve that shall automatically shuttle air from the front system to the rear system should loss of air pressure occur. This system shall also modulate the amount of air so the spring brakes shall apply in direct relationship to the amount of pressure applied to the treadle valve.

The brake system shall be equipped with a Bendix SR-1 valve to provide modulated spring brakes in the event there is low air pressure in the rear axle air supply reservoir.

The spring brakes shall be piped in such a manner that if the treadle valve is depressed while the spring brakes are applied, the spring brakes shall release and remain released as long as the treadle valve is depressed. They shall reapply immediately when the treadle valve is released.

The piping in the air system shall be 2-ply nylon reinforced color coded tubing for all stationary lines.

AIR DRYER

The air system shall include a MERITOR/WABCO System Saver 1200 air dryer. The dryer shall have a capacity of 30 CFM of air flow.

The air dryer shall have a spin on desiccant cartridge for ease in servicing the dryer desiccant.

The air dryer shall incorporate an integral turbo cut-off valve. The turbo cut-off valve shall close the path between the air compressor and the air dryer purge valve during the compressor "unload" cycle. This shall allow the air dryer to purge the water and contaminates without any loss of turbo boost or engine horsepower.

A 12 volt, 100 watt heated moisture ejector shall be an integral part of the air dryer. This heater shall be thermostatically controlled. The electrical connection for the heater shall use a sealed electrical connector to protect against moisture and corrosion.

AUTOMATIC MOISTURE EJECTORS

All air reservoirs of the chassis air system shall be supplied with automatic moisture ejectors. The reservoir drain valves shall allow the accumulation of contaminants that are collected in the reservoirs to be drained

off to the atmosphere.

AIR INLET / OUTLET

An outside air system inlet/outlet connection shall be provided and mounted. This connection shall be clearly labeled as to the function. A pipe thread frame coupling shall be provided with 1/4" npt threads. The fire department shall install the appropriate hose quick connect fittings.

MERITOR/ROCKWELL/WABCO ABS BRAKE SYSTEM

A four channel, single rear axle model, MERITOR/ROCKWELL/WABCO ABS Braking System shall be supplied.

A frame mounted electronic control unit (ECU) shall monitor and control wheel speed during braking. Wheel sensors, constantly monitoring wheel speed, send information to the ECU. If a wheel begins to lock the ECU transmits an electrical impulse to modulator valves that can apply, release or hold the air pressure in the brake chambers. The rapid modulation of air pressure prevents wheel lock-up and increases driver control.

This ABS system shall be a 4S/4M system with four (4) wheel speed sensors and four (4) modulator valves.

If a fault occurs in one wheel, that wheel shall have normal (non-ABS) brake function. The other wheels shall continue to provide the ABS function. If the ABS system should fail completely, the brake control shall be returned to normal (non-ABS) braking.

An ABS warning light shall be installed on the driver's dash message center. This warning light shall cycle through a test stage at the point of ignition turn on and remain illuminated until the vehicle reaches approximately four (4) MPH. The light shall illuminate in other conditions to warn of an ABS system failure and shall illuminate when the diagnostic function is activated.

LASER ALIGNMENT

The chassis shall have a laser alignment performed at the factory before delivery.

DIESEL ENGINE

The chassis shall be powered by a CUMMINS or approved equal Diesel engine as described below:

The model of the engine shall be determined by the “Road test Certification” as shown on page 2 of this specification with a minimum of 360 horsepower.

Standard Equipment on the engine to include the following:

GOVERNOR: Limiting speed type
AIR CLEANER: Farr or equal with fresh air intake.
OIL FILTER: A full flow / by-pass combination
LUBE OIL COOLER: Non-drainback, thermostatically controlled with full flow cooling.
FUEL FILTER: One fuel filter providing 10 micron absolute filtration with check valve.
STARTER: A DELCO, 12 volt, 38 MT-HD starter motor.
AIR COMPRESSOR: A Wabco 18.7 cfm compressor shall be provided.

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ENGINE OIL

The engine shall have the initial factory fill made with a non-synthetic engine oil meeting the engine manufacturer's recommendations.

EMISSION CONTROLS

The engine supplied shall meet the minimum standards of the EPA 2007 requirements. If the EPA 2007 engines are available then the 2010 EPA standards will apply..

ENGINE BRAKE

A "JACOBS" Engine Brake shall be supplied.

The driver's dash shall include an OFF / LOW / HIGH engine brake control switch.

Activation of the engine brake shall occur at zero throttle position. The transmission ECU shall be programmed to operate in the pre-select downshift mode to maximize the retarding power of the engine brake.

The brake lights shall illuminate when the Jacobs Brake is in operation.

The Jacobs brake shall be inoperative when the chassis is in pump mode.

The "JACOBS" engine brake shall be covered under the standard five year Cummins engine warranty.

ENGINE FAST (HIGH) IDLE

The chassis shall be equipped with an Electronic Idle Control (EIC) for the electronic engine. Preset speed is factory adjustable.

The fast idle provision shall only function when the parking brake is set and the transmission is in neutral. Manual selection of the fast idle shall be controlled by a driver's momentary switch.

Automatic activation of the fast idle shall occur when a low voltage condition exists, the truck is in neutral and the parking brakes are applied.

Cancellation of the fast idle shall be achieved by resetting the manual switch or by depressing the service brake pedal.

ENGINE COOLANT FILTER

A precharged spin-on corrosion inhibitor/water filter shall be installed in the cooling system. Shut off valves shall be supplied on both sides of the filter to facilitate element changing with out loss of cooling system fluid.

AUXILIARY ENGINE COOLER

The cooling system shall have an auxiliary engine cooler mounted in the upper radiator water pipe. The apparatus shall have the fire pump water circulated to the cooler from a valve located on the apparatus pump

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panel.

ENGINE COOLANT RADIATOR

The engine coolant radiator shall have sufficient capacity to perform under the engine manufacturer installation requirements. The chassis manufacturer shall demonstrate the ability to meet this requirement with the submittal of an approved EPQ to the fire department for the apparatus.

COOLANT RECOVERY SYSTEM

A coolant recovery system shall be installed on the chassis. This tank is designed to capture coolant overflow when the engine coolant warms and expands. As the engine cools the overflow is then pulled out of the tank and back into the radiator, thus maintaining proper coolant levels.

CHARGE AIR COOLER RADIATOR

The engine charge-air cooler shall have sufficient capacity to perform under the engine manufacturers installation requirements. The chassis manufacturer shall demonstrate the ability to meet this requirement with the submittal of an approved EPQ to the fire department for the apparatus.

COOLANT

The coolant system shall contain an ethylene glycol and water mixture to keep the coolant from freezing to a temperature of -34 degrees F.

COOLANT HOSES

The entire chassis cooling system shall have premium rubber hoses. All clamps to be stainless steel worm drive type clamps.

SPARK ARRESTOR

A spark arrestor shall be installed in the chassis air intake system. This arrestor shall be mounted behind the intake grille to filter out airborne embers.

HORTON FAN

A HORTON or equal fan clutch shall be installed on the engine. A manual switch shall be provided, in the dash, to over ride the fan control in event of fan failure or conditions that may result in overheating of the engine.

EXHAUST SYSTEM

A single stainless steel exhaust pipe shall be provided for the engine. The exhaust pipe shall be supplied with a heat wrap that extends from the engine turbo charger to just below the frame rail.

The exhaust tubing from the turbocharger to the exhaust aftertreatment device shall be stainless steel.

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DIESEL PARTICULATE FILTER

Replacing the conventional muffler the exhaust system shall have an After Treatment Device (ATD) located under the frame on the right side of the apparatus immediately behind the cab. The ATD shall include a Diesel Oxidation Catalyst (DOC) to trap particulate matter in the exhaust gas.

TAILPIPE

The tailpipe shall extend from the exhaust muffler/aftertreatment device to the rear of the vehicle making a 90° bend to exit the vehicle ahead of the rear tires on the curbside of the vehicle. The end of the pipe shall be cut at a 45° to the exhaust pipe centerline.

The pipe shall be unpolished stainless steel.

TRANSMISSION

The transmission shall be an Allison 3000EVS automatic transmission with electronic controls.

The transmission shall be equipped with a lock-up control circuit that shall automatically shift the transmission into 4th gear lock-up when the pump is shifted into gear.

TRANSMISSION COOLER

An automatic transmission cooler shall be provided as an integral part located in the bottom tank of the radiator. It shall be designed to withstand 165 psi working pressure and an intermittent pressure of 250 psi. The cooler shall be of sufficient size to maintain the operating temperature within the recommended limits of the transmission manufacturer.

TRANSMISSION DRAIN VALVE

A drain valve, not plug, shall be installed in the transmission oil pan. The valve shall be made of corrosion resistant forged brass and stainless steel. The ball shall provide a full flow opening fro efficient draining and a perfect seal when closed. The valve opening lever shall be provided with a lift and turn safety lock to prevent accidental opening of the valve. The discharge side of the valve shall have a nipple to allow a hose to be installed to drain waste oil into a container.

TRANSMISSION FLUID

The transmission shall be provided with heavy-duty transmission fluid meeting Allison specification TES-389.

FIVE SPEED PROGRAMMING

The transmission shall be programmed for five speeds. The transmission shall have the following gear ratios.

First - 3.49
Second - 1.86
Third - 1.41
Fourth - 1.00
Fifth - 0.75

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Reverse - 5.03

The transmission shall be able to shift from first through fifth gear without operator intervention. The chassis shall be geared for the top speed in 5th gear.

TRANSMISSION RANGE SELECTOR

The transmission shall be controlled by a push button type shift control. It shall be internally illuminated for night operation.

TRANSMISSION OIL LEVEL SENSOR

The transmission shall be equipped with the oil level sensor (OLS). This sensor shall allow the operator to obtain an indication of the fluid level from the shift selector. The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

DRIVELINES

Universal joints and driveshafts shall be SPICER 1710 series or equal. The driveshaft tube shall be a minimum of 4.0" diameter with a .134" tube wall thickness. The driveshaft slip joints shall be coated to reduce sliding friction and thrust under high torque loads. Permanent driveline installations shall be balanced to prevent vibration.

FUEL TANK

The fuel tank shall have a capacity of 50 gallons (US) and be D.O.T. certified. It shall be mounted with straps bolted to the bottom frame flange to allow for easy removal. The tank construction shall be of 12 gauge steel with single fuel pickup and return tubes. The baffled tank shall be vented to prevent low vacuum and facilitate rapid filling.

The tank shall have a 2" NPT fill to the driver's side of the chassis.

The fuel tank sending unit is to be mounted to the driver's side of the fuel tank for easy replacement without removing body panels.

FUEL LINES

Polyamide fiber, nylon braided, reinforced tubing with push-on reusable fittings shall be provided for the chassis fuel lines.

FUEL SHUT-OFF VALVE

A, ball type, fuel line shut off valve shall be installed in the suction side fuel line. The shut off valve shall be located near the inlet to the primary fuel filter.

FUEL/WATER SEPARATOR

The Cummins engine shall be equipped with an integrated fuel / water separator with a self venting bottom drain valve. This filter shall be able to remove up to 95% of dissolved water and up to 99% of free standing water.

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ALTERNATOR

A LEECE-NEVILLE model LN4867J 270 Amp alternator shall be installed on the engine. This alternator is internally rectified and regulated.

FIRETRUCK CAB

The cab shall be the manufacturers "Top of the Line" model.

The apparatus shall be designed to operate in emergency conditions. These conditions require the apparatus to maneuver into areas at a high rate of speed. To facilitate in these operations a cab-over-engine design is required in order to reduce the overall length of the apparatus thus increasing the maneuverability.

The cab design must be such to provide safe and efficient transport of emergency personnel. The cabin shall be designed with four (4) side doors of the largest size possible and with a grab handle and step arrangement to provide ease of entry and egress.

There shall be up to four (4) positions available for occupant transport with a minimum of two (2) forward facing seating positions in the cab. The number of seats and seating locations are described in detail later in this document.

The apparatus cab shall be of the latest in automotive design, styling and appearance.

CAB MATERIALS AND CONSTRUCTION

The extruded aluminum cab shall have the following material gauges as a minimum:

- Cab floor - 3/16" (.190") aluminum
- Front skin - 3/16" (.190") aluminum
- Cab side panels - 3/16" (.190") aluminum
- Cab rear wall - 3/16" (.190") aluminum
- Cab driver's floor - 3/16" (.190") aluminum
- Cab officer's floor - 3/16" (.190") aluminum
- Cab crew area floor - 3/16" (.190") aluminum
- Cab roof - 3/16" (.190") aluminum
- Cab doors - 3/16" (.190") aluminum

Roof Rail Section Extending from the front to the rear of the cab above the doors the cab shall have and extruded aluminum section. This section shall be designed to interlock with the roof sheet and incorporate the door drip molding in one single piece.

Upper Transverse Member Amid ship in the cab there shall be a boxed beam header assembly located transverse in the cab from left to right.

Front Door B-Post This vertical box section of the cab located behind each of the front doors provides the slam post for the door latch assembly. This section also is a main member in the cab skeletal system. The B-Post ties into the Upper Transverse Member to provide torsional stiffness in the open space design of the cab.

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Rear Door B-Post The box assembly design of the rear door B-post provides an anchor for the rear door latch assembly. This section is the main vertical support at the cab rear corner providing the anchor point for the rear wall structural lattice network.

Roof Panel Rails - The roof panel sub-assembly shall have extruded hat section supports bonded to the roof skin. These roof hat sections shall be joined to the Cab Roof Rail Section to complete the upper cab skeletal structure. These completed Roof Panel Rails shall provide a grid for maximum roof crush and deflection strength. The roof shall support a minimum weight of 250 lbs. / sq. ft. without permanent roof deformation.

Rear Wall Rails - The rear wall assembly shall have extruded hat section supports bonded to the wall skin. These sections shall be joined to the Roof Panel Rails and to the rear door slam post and floor provide a rear wall grid structure with maximum strength.

Cab Front Wall - The front wall of the cab shall be designed with a double wall construction to reduce the effects of exterior noise in the crew and operator compartment.

CAB CRASHWORTHINESS TEST

Dynamic tests shall be performed to evaluate the crashworthiness of the proposed vehicle cab configuration to the requirements of NFPA 1901-09 section 14.3.2.

Cab roof strength shall be tested utilizing the dynamic preload criteria from SAE J24221 paragraph 5 specifications and procedures.

Front impact strength integrity shall be tested utilizing SAE J24202 with ECE R293 Annex 3 paragraph 4 equivalent energy.

Quasi-static roof strength shall be based on SAE J2422 paragraph 6 and ECE R293, paragraph 5 specifications and procedures.

A letter of certification shall be provided upon request by the department.

CAB DIMENSIONS

The cab shall meet or exceed the following overall dimensional requirements:

- Overall Width - 100 inches
- Center of front axle to back of cab - 60 inches
- Center of front axle to front of cab - 74 inches
- Windshield area - 3,756 sq. in. minimum
- Front grille opening - 478 sq. in. minimum
- Combined side grille opening - 84 sq. in. each minimum
- Cab full tilt angle - 45 degrees minimum
- Cab full tilt height - 185 inches maximum

Cab interior dimensions shall be provided as a minimum in the following chart:

- Drivers side floor width 25-1/2 inches minimum
- Floor to the ceiling in the driver and officers area of the cab 59-1/2 inches minimum
- Floor to the top of the doghouse 28-1/2 inches maximum

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- Officers side floor width 24-1/2 inches minimum
- The measurement across the floor from the rear wall to the first vertical portion of the engine enclosure 39 inches

CAB DOORS

The cab entry and egress shall be designed for a firefighter in full turnout gear. Each door shall open a minimum of ninety degrees to afford the firefighter maximum space.

The doors shall be of a flush design each having exposed, one-piece, polished stainless steel hinges. The hinge shall be made of 12-gauge material with a minimum hinge pin diameter of 1/4 inch.

The door windows shall have interior and exterior glass weather seals to prevent the influx of exterior air.

The doors shall have exterior and interior paddle type latches for ease of opening with a gloved hand. The paddle latches are to have a rubber gasket, on the outside, separating the handle from the finished painted surface.

FRONT DOORS

The cab front doors shall be of the full-length design enclosing the entire step area of the cab. The door shall be a minimum of 38-1/2 inches wide and 74 inches tall. The front door windows shall have a minimum of 712 square inch area of viewing glass per door. There shall be a fixed piece of forward glass in each of the front doors.

ELECTRIC WINDOWS

The front (2) roll down door windows shall be equipped with electrically operated mechanisms to control the opening and closing of the windows. Control shall be with a momentary switch near the door.

One (1) additional switch shall be supplied in the driver's door to control both of the power windows from the driver's position.

REAR CAB DOORS

The rear cab doors shall be similar to the forward doors and shall be located directly behind the front wheel well area. These doors shall be 74 inches high x 34 inches wide. Each door shall have a roll down rear window with a minimum glass viewing area of 670 square inches.

REAR WINDOW SAFETY BARS

There shall be a one inch stainless steel grab bar installed on each rear door. This bar is to be installed on the rear door frame even with the window in the down position to prevent firefighters from using the glass in the door for a handle.

CAB DOORS - INTERIOR TRIM

To provided durability the interior of the cab doors shall be finished with full length aluminum panel that is finished with Zolatone high abuse paint. Plastic, ABS or vinyl interior door panels are not acceptable

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STOP SIGN - INTERIOR CAB DOOR

A reflective stop sign shall be mounted on each cab door for a total of four (4). The stop sign area shall contain a minimum of 96 square inches of reflective material and be centered on the door lower kick plate area and shall be visible when the cab door is open to traffic.

INTERIOR DOOR LOCKS

All doors shall have door locks with interior controls and exterior keyed door locks. The installation shall be in conformance with FMVSS 206, with specific adherence to 49 CFR 571.206 Section 4.1.3 requiring that "Each door shall be equipped with a locking mechanism with an operating means in the interior of the vehicle". All doors shall be keyed alike. The doors shall be equipped with appropriate safety interlocks to prevent accidental locking of the doors when closed.

CAB GLASS

AS-1 safety laminate glass shall be used in a two piece, wrap around design, as large as possible windshield area for maximum visibility. The windshield shall have the style of a one-piece assembly with the practical installation of two pieces for lower replacement cost. The windshield shall be readily available from a nationally recognized automotive glass manufacturer that maintains local distribution outlets.

All glass shall be tinted.
Bidder must state if the windshield glass is available from local glass suppliers or if it a manufacturer's exclusive.

All fixed glass shall be installed with a one-piece triple locked rubber lacing material. Due to long term appearance two-piece chrome trim lock lacing is not desired.

CAB SIDE WINDOWS

Two AS-2 tempered glass, fixed side windows, 26-1/2" high x 16" wide shall be furnished, one on each side behind the forward doors. All glass shall be tinted. These windows shall be installed with a one-piece triple locked rubber lacing material.

SUNVISORS

The driver and officer side of the cab shall be equipped with a sun visor. The vinyl covered visors shall be a minimum of 17-1/2" by 9".

WINDSHIELD WIPERS

Two speed electric pantograph wipers shall be installed. These wipers shall have minimum 24" blades and have 28 1/2" wet arm electric pump washers. A 70 oz. Minimum windshield washer reservoir shall be furnished.

INTERMITTENT WIPER CONTROL

A rotary combination intermittent electric wiper / washer switch shall be provided on the left hand side of the driver's dash.

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STEERING WHEEL AND COLUMN

The steering column shall be a DOUGLAS or equal tilt / telescopic type with an integral high beam / turn signal control switch. The column shall have self-canceling design for the turn signal switch. A 4-way warning "Hazard" light switch shall be mounted on the column. For safety, a rubber boot shall be installed to cover the steering shaft from the dash to the floor.

The steering wheel shall be a minimum of 18-inch diameter, covered with a padded absorbite finish. A lever on the left side of the steering column shall control the telescopic feature of the steering column.

FASTENERS

All cab exterior fasteners shall be stainless steel type fastened to the cab with nutserts.

BATTERY ACCESS

The rear cab steps shall have a removable kick panel, providing access to the batteries for routine maintenance and inspection.

CAB CORROSION TREATMENT

The cab shall have a corrosion preventative material conforming to Mil Spec C-16173-C, Grade 1, applied during and after construction. A 10-year warranty against perforation due to rust or corrosion shall be furnished for the cab.

EMI/RFI PROTECTION

The apparatus shall incorporate the latest designs in the electrical system with state of the art components to insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

The apparatus proposed shall have the ability to operate in the environment typically found in fire ground operations with no adverse effects from EMI/RFI.

EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring that utilizes shielding and loop back grounds where required. The apparatus shall be bonded through wire braided ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode protected to prevent transient voltage spikes.

BATTERY BOX TRAY

The battery box trays shall be painted steel. The battery hold down brackets hardware shall be black powder coated to resist corrosion.

BATTERY BOX COVER

To reduce road spray a sand paper abraded finish aluminum cover shall be installed on each battery box.

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BATTERY BANK

A single battery system shall be provided, utilizing four (4) high cycle type Group 31 batteries.

This system shall be capable of engine start after sustaining a continuous 150 amp load for 10 minutes with the engine off (NFPA-1901).

A battery disconnect switch (Rated at not less than 450 amps continuous) shall be used to activate the system and provide power to the power panel. A green pilot light shall illuminate to indicate that the1 battery bank is activated.

BATTERY CABLES

All battery wiring shall be "GXL" battery cable capable of handling 125% of the actual load. It shall be run through a heat resistant flexible nylon "HTZL" loom rated at a minimum of 300 degrees Fahrenheit. All cable connections shall be machine crimped and soldered.

STARTING CIRCUIT

One (1) engine start button is to be located on the lower right dash panel. It shall be wired to heavy duty solenoid rated at not less than 1100 amps. The battery indicator light is to be located directly above the start button to indicate that the battery bank is on.

BATTERY CONDITIONER / CHARGER

A KUSSMAUL AUTO CHARGE 1200 battery charger shall be installed, under the driver's seat, for charging the batteries. This charger shall include an integral bar graph display to indicate the condition of the batteries. Automatic sensing of the battery condition shall stop charging when the batteries are fully charged.

Specifications:
Input: 115 volts 50/60 Hz. 12 amps maximum
Output: 12 vdc 0-40 amps

SHORELINE AUTO-EJECT

A KUSSMAUL Super Auto Eject, model 091-55-20-120, with yellow weatherproof cover shall be mounted on the cab exterior immediately adjacent to the rear of the driver's door.

The Super Auto Eject is to be completely sealed to prevent internal contamination of the working components.

The internal switch arrangement of the Super Auto Eject shall be designed to close and open the 120-volt AC circuit after the mating connector is inserted and before the connector is removed. This design shall prevent arcing at the connector contacts to provide long life.

The electrical connection shall be provided as a 120-volt AC - 20 amp type using a NEMA 5-20P connector.

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ENGINE ENCLOSURE

The engine enclosure shall be covered to reduce engine noise and reduce inside temperatures.

The under side of the engine enclosure shall be covered with a sandwiched material for interior cab noise and heat rejection. This sandwiched acoustical material shall have one layer of 1/8" foam, a 3/16" single barrier septum and a 7/8" layer of foam to provide on overall thickness of 1-3/16". The sandwich material shall be chemically bonded to prevent layer separation. A finished surface treatment of metalized film shall be provided on the engine side of the barrier. The acoustical barrier shall be held in place with mechanical fasteners in addition to adhesive.

The insulation for protection from heat and sound shall keep the dBa level within the limits stated in the current edition of NFPA 1901.

ACCESS FOR FLUID SERVICING

The engine enclosure shall have a hinged and latched panel to provide access to the engine lubricating oil dipstick, power steering fluid reservoir dipstick and engine coolant recovery reservoir. This access shall allow that these fluid levels can be checked and topped off, if required, without raising the cab.

INTERIOR CEILING PADDING AND TRIM

The cab front interior ceiling shall have a one-piece, removable, sound absorbing headliner to cover all wiring and tubing used for lights and antenna leads.

REAR WALL COVERING

The rear interior wall of the cab shall have a two-piece, removable, wall covering to finish the interior trim, cover all wiring and tubing used for lights and antenna leads.

FLOOR COVERING

The front and rear floor areas of the cab shall be covered with sound barrier floormats. This floormat shall be a three ply material with a 3/16" thick open cell isolation barrier of Polyurethane, a 3/32" thick closed cell Nitrile mid barrier for section reinforcement, and a 1/16" thick embedded pebbled grain wear surface.

INTERIOR CAB STEP TRIM

The cab steps shall be completely enclosed behind each door. The toe kick surface shall be covered with aluminum treadplate trim.

STEP LIGHTS

Four (4) Whelen OS Series LED step well lights shall be supplied. These lights, one in each step well, shall be mounted at the top of the step directed downward toward the lower step. A chrome flange is to be provided for each light. All step well lights shall be illuminated when any door is opened and the battery selector is on.

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GRAB HANDLES

One (1) additional molded grab handle shall be installed inside the cab. The handle shall be located on the officer's side on the A Post.

Two (2) additional molded grab handles shall be installed in the cab. These handles shall be located one each side on the B Posts side of the crew area doors.

RADIO COMPARTMENT WITH DOOR

Beneath the officer's seat there shall be a radio compartment with minimum interior dimensions of 19-1/2" wide x 17" long x 7" high. This compartment shall have a side mounted diamond plate door mounted on a piano hinge.

CAB STEP DIMENSIONS

The front cab steps shall have the following overall dimensional requirements:

- Driver's lower step size 10-1/4 inches deep minimum
- Driver's lower step size 29-1/2 inches front to back

- Officer's lower step size 10-1/4 inches deep minimum
- Officer's lower step size 29-1/2 inches front to back

INTERMEDIATE CAB STEP

The cab shall have a full width intermediate anti slip inside step. The intermediate step shall be approximately 9 inches from the top of the lower step to the top of the intermediate step.

INTERIOR CAB STEP TRIM

The cab steps shall be completely enclosed behind each door. No portion of the cab entrance step shall be exposed when the door is in the closed position. The lower step shall be sealed from the under side of the cab to eliminate road splash from entering the step area while the vehicle is driving. The horizontal step surfaces shall be covered with bright aluminum tread plate meeting the requirements of NFPA-1901.

The vertical toe kick surface area of the cab step wells shall be covered with aluminum tread plate.

COMPARTMENT OPEN LIGHT

A Red “Open Compartment Flashing Light”, Whelen OS Series LED shall be mounted on the face of the overhead panel. A chrome flange is to be supplied with the light.

This compartment open door light is wired with a flasher to the power panel for completion to the compartment door open circuit on the body.

The compartment open light circuit shall be wired so that the light circuit is deactivated when the parking brakes of the apparatus are applied.

A label shall be applied adjacent to the light '**DOOR OPEN**'.

INTERIOR CAB LIGHTING

Four (4) step well lights shall be supplied. The lights shall be Whelen OS Series white LEDs with angled chrome plated covers, one in each step well. All step well lights shall be illuminated when any door is opened and the battery selector switch is on.

DOME LIGHTS

Two (2) red/clear LED clear dome lights shall be supplied. One light shall be installed in the front of the cab centered over the engine doghouse. One light shall be installed centered over the rear crew area. These lights shall be illuminated when any door is open or individually operated with a switch mounted on the light and the battery switch is in the on position.

CAB HEATER / DEFROSTER

The in cab climate control system shall be installed beneath the dash on the officers side of the cab. This unit shall include a three-speed blower, temperature control valve and a minimum of a 44,000 BTU heater core.

The heater control shall be located on the engine cover mounted control center. The control shall have separate on-off blower speed switch, thermostat control and outlet blend air switch.

There shall be one heat outlet with directional and flow control provided on the driver and one on the officer side of the control center.

There shall be one under dash floor directed heat outlet provided on the drivers side and one on the officers side of the cab.

There shall be two floor heater outlets, one located on each side of the cab beneath the dash.

There shall be a Max Flow defrost system installed into the front of the cab. The ducting of the Max Flow system shall direct heated air onto the windshield to provide defrost and defog capability.

45,000 BTU AIR CONDITIONING

A climate control system shall be furnished in the cab. The system shall consist of a minimum of a 45,000 BTU air conditioning evaporator centrally located on the rear of the engine doghouse.

The system is to have a 12.6 cu. in. minimum compressor mounted on the engine to provide the compressed refrigerant to the system. The compressor is to be plumbed to a heavy duty truck, dual fan air conditioning condenser mounted on the cab roof. The condensing unit shall have an aerodynamic shroud that is painted to match the color of the cab roof. There shall be an extended life filter receiver/dryer with a pressure relief valve installed to protect the system from contaminates, moisture, and high pressure. It is to have a sight glass for visual inspection and ease of service.

The evaporator shall have an externally equalized expansion valve and be thermostatically protected to prevent freeze up. Dual high performance 3-speed blowers shall provide a minimum of 700 CFM air flow. Each blower is to be controlled separately. Four (4) forward facing and three (3) rear facing full adjustable diffusers with shutoff capability shall be utilized to direct the air flow through the cab.

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The air conditioning on/off switch, thermostat control, and blower switches shall be located on the evaporator unit.

The air conditioning system shall use R134A freon.

36,000 BTU SUPPLEMENTAL HEATER

A minimum of a 36,000 BTU auxiliary heater shall be furnished inside the conditioning evaporator unit to provide additional cab heating during cooler weather. The heater core is to be plumbed to the water lines of the engine cooling system.

CAB INSULATION

Foam rubber type insulation shall be installed in the rear wall and the cab ceiling to provide a better sound and heat barrier. The insulation shall be a minimum of 1" thick. The material shall be compliant with FMVSS-302.

DASH TRIM

The drivers cab dash console shall be made of black ABS with an appearance of the latest in automotive design, styling. Accompanying the dash console in the forward section of the cab shall be an officers side flat dash for the mounting of a mobile data terminal.

The forward overhead console area shall have an automotive styled black ABS covering. This console shall be provided with a center overhead area to house sirens, officer's side speedometer, AM/FM radio and an information center. The console shall have depressed areas for styling with the installation of items such as the visors, electrical access

DRIVER INSTRUMENTATION AND CONTROLS

The cab dash panel shall have black textured anti-glare surface. The gauges shall have red LED back lighting for enhanced visibility. Upon on initial ignition sequence a lamp check function shall illuminate the warning light telltales, the self diagnostic message center shall sequence the warning light telltales if data link communications are lost. The instrument panel shall include the following gauges and indicators.

Electronic speedometer with LCD odometer
Tri cluster gauge that includes:
- Electronic tachometer
- Engine coolant temperature gauge, with warning light and buzzer
- Engine oil pressure gauge, with warning light and buzzer

Transmission fluid temperature gauge, with warning light and buzzer
Two air pressure gauges, with warning light and buzzer
Voltmeter, with low voltage warning light and buzzer
Fuel level gauge

High beam indicator light
Parking brake set light
Turn signal indicator lights

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The lighting control panel is to be located to the left side of the instrument panel. This panel shall have a black textured anti-glare surface. The lighting control panel shall include the following:

Headlight control switch
Dash rheostat for instrumentation lighting control
Wiper and washer control switches

The engine control panel is to be located beneath the instrument panel on the driver's right hand side. The panel shall have a black textured anti-glare surface. The engine control panel shall include the following:

Keyless ignition switch with a green pilot light

The apparatus control panel is located beneath the instrument panel on the driver's left hand side. The panel shall have a black textured anti-glare surface. The apparatus control panel is designed for the location of pump shift controls.

AUDIBLE REMINDER

There shall be an audible alarm that shall sound when the turn signal remains flashing for a distance greater than one mile. The reminder shall not sound when the hazard lights are operating.

There shall be an audible alarm that shall sound when the headlight switch is left in the on position and the ignition is off. The alarm shall self cancel after 2 minutes of operation.

There shall be an audible alarm that shall sound when the parking brakes are NOT set and the ignition is turned off. This alarm shall self cancel after 2 minutes.

The Parking Brake reminder shall sound an audible alarm when the parking brakes are set and an indicated speed of over two miles per hour occurs.

DUAL TRIP ODMETERS

There shall be two (2) trip odometers in the driver's information center. Each shall be capable of independent operation and reset. They shall be labeled Trip1 and Trip2 when the trip mileage is shown in the LCD panel.

SPEEDOMETER ACTIVATED IN PUMP MODE

The speedometer and odometer shall be activated while in pumping mode.

LOW FUEL LIGHT

A "Low Fuel" warning light and alarm shall be installed in the dash message center. This light shall illuminate when the apparatus fuel level reaches 25% of the fuel remaining.

TRANSMISSION OVERHEAT WARNING LIGHT

A transmission oil temperature light with alarm shall be provided on the dash message center.

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LOW VOLTAGE WARNING

A low voltage indicator light shall be installed on the dash message center. An alarm and the dash indicator light shall activate when the system voltage drops below 11.8 volts.

AIR CLEANER RESTRICTION INDICATOR

An air cleaner restriction indicator shall be installed in the driver's message center. The indicator shall provide visual warning when a high air restriction condition exists for a minimum of 4 seconds.

LOW COOLANT WARNING

Low coolant warning shall be accomplished through the engine electronics to provide driver warning via the engine stop warning light.

CONTROL CENTER

Mounted on the engine enclosure there shall be a black ABS driver / officer control center. This area shall include various controls and functions that must be available to the driver and officer. On the top of the control center there shall be an access panel for maintenance and troubleshooting of devices mounted on the control center.

The apparatus warning light switch panel shall be mounted on the control center immediately to right of the driver.

The apparatus parking brake control valve shall be located on the engine enclosure mounted control center. The parking brake control valve shall be able to be controlled by the officer in the event of an emergency.

SWITCH PANEL

The switch panel shall be a Class 1 Smart Programmable Switch (SPS) or equal panel installed as a multiplexed node to provide input and output information to the apparatus electrical system. The panel shall have ergonomic rubber molded rocker type switches with backlighting.

The panel shall include one (1) function as a master control switch to allow for pre-selection of response mode functions. The remaining switches shall be programmed and labeled with the manufacturer standards as to the custom options selected for the vehicle.

ELECTRICAL SYSTEM

The apparatus shall be hard wired or equipped with a Class 1 ES-Key Management System or equivalent multiplex system for complete control of the electrical system devices. This management system shall be capable of performing load management functions, system monitoring and reporting, and be fully programmable for control of the electrical system.

The ES-Key system shall utilize a Controller Area Network (CAN) to provide multiplexed control signals for "real time" operation. The system shall consist of the following components:

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- *Universal System Manager (USM)* - The USM device shall be the CAN network controller and provide various functions to the apparatus such as load management. The USM shall be programmed from a network interface to a PC computer.
- *Power Distribution Module(s) (PDM)* - The PDM shall be a control device on the network with a primary function as power distribution. Receiving control signals from the USM the PDM turns on and off relays providing power to its connected loads. The PDM also shall contain digital switch inputs allowing for input clustering throughout the apparatus.
- *Information Display Module* - for displaying text, warnings and diagnostics. The information Display Module shall allow the fire department to access and change load management shedding priority and maintenance text listing the routine maintenance items and lubrication capacities on the apparatus.
- *Input / Output Module* - The module shall have 16 inputs to communicate with the USM and 3 outputs for various chassis functions.

The system shall provide diagnostic capabilities for troubleshooting the electrical system of the apparatus.

CHASSIS COLOR CODED WIRING

All chassis wiring shall be type "GXL" in accordance with S.A.E. J1128 and NFPA-1901. ALL wiring shall be COLOR CODED and continuously marked with the circuit number and function.

All wiring to be covered in nylon heat resistant "HTZL" loom rated at a minimum of 300 degrees F exceeding the heat requirements of NFPA-1901.

A battery "loop back" ground circuit shall be supplied for the EDS system to reduce the possible effects of Electromagnetic and Radio Frequency Interference.

The chassis cab, engine and transmission shall be electrically bonded to the chassis frame rails with braided ground straps.

ELECTRICAL SYSTEM CONNECTORS

All multiple conductor electrical connections shall be made with electrical connectors. The connectors shall become mechanically locked when mated.

All single wire terminations requiring special connectors with a ring or spade terminal shall be crimped, and wrapped with heat shrink tubing.

FIRE COM INTERCOM SYSTEM

There shall be a Fire Com intercom system installed in the chassis cab. The intercom system shall be installed and have all wiring and components to render the system operational as follows:

One (1) 3020R series intercom system features:
For use with two radios
Voice-activated circuitry (VOX)
Continuous mobile radio monitoring
Independent controls allow quick adjustment of volume and squelch
Durable steel housing protects against heat, moisture, and damage from impact
Dual radio monitoring and transmit selector switch.

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Other installed components include:

DRIVER'S POSITION

The following headset shall be installed adjacent to the driver's seating position in the cab.

One (1) Fire Com UH-10 headset shall be provided. Each headset shall have a noise-canceling electret microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort. The microphone boom rotates 180° to allow headset operation with right or left hand

Secure Red PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will activate the radio as a transmit.

One (1) Fire Com Headset plug-in modules for interior mounting in apparatus. Single plug.

One (1) cable will be required for the headset installation.

OFFICER'S POSITION

The following headset shall be installed adjacent to the officer's seating position in the cab.

One (1) Fire Com UH-20 headset shall be provided. Each headset shall have a noise-canceling electret microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort. The microphone boom rotates 180° to allow headset operation with right or left hand

Secure Black PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will NOT activate the radio as a transmit.

One (1) Fire Com Headset plug-in modules for interior mounting in apparatus. Single plug.

One (1) cable will be required for the headset installation.

CREW POSITIONS

The headsets shall be installed adjacent to the crew seating positions in the cab.

Two (2) Fire Com UH-20 headsets shall be provided. Each headset shall have a noise-canceling electret microphone, detent-volume control, liquid-foam ear seals. The headset is specially designed dome accommodates most helmets and will not interfere with helmet fit or comfort. The microphone boom rotates 180° to allow headset operation with right or left hand

Secure Black PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will NOT activate the radio as a transmit.

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Two (2) Fire Com Headset plug-in modules for interior mounting in apparatus. Single plug.

Two (2) cables will be required for the headset installation.

PUMP PANEL POSITION

Two (2) FireCom wireless headsets shall be furnished, One for pump operator and one for turntable operator. They shall have minimum range of 100 feet.

Secure Red PTT button on the dome requires a solid push to activate and deactivate, eliminating the chance of accidental transmissions. This headset will activate the radio as a transmit.

RADIO INTERFACECABLES

Two (2) radio interface cable will be provided for the following radio:

The intercom control shall be mounted on top of the engine enclosure within reach of the driver and officer.

RADIO ANTENNA MOUNTS

Two (2) NMO mount shall be roof mounted, on the officer's side of the cab.

The antenna mount shall be located 34 inches from the front face of the cab and 18 inches from the cab side.

The unterminated coax is to be routed in the cab to the radio power circuit termination.

The antenna wiring shall terminate in the center of the cab on top of the engine enclosure.

12VDC TRIPLE POWER POINT

A triple outlet 12 volt, socket (cigarette lighter) type, receptacle shall be provided.

The power point shall be wired to switched battery power with the appropriate wire size and fuse.

The power point socket shall be provided, centered on the front area of the engine doghouse for use by the driver and/or officer.

12VDC POWER CIRCUIT

A circuit protected 30 amp battery "hot" circuit, a circuit protected 30 amp battery switched circuit, and a ground circuit with the proper wire size to handle the current shall be provided. These circuits are provided for two-way radio and/or accessory wiring.

The radio / accessory power circuit shall terminate in the center of the cab on top of the engine doghouse.

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HANDHELD SPOTLIGHT

An Optronics KB-4003 400,000 candlepower hand held spotlight shall be hard wired into the cab electrical system and mounted convenient for the officer's use.

CAB SIDE SCENE LIGHTS

There shall be side scene lights installed on the side of the cab between the front and rear cab doors.

The lighting position(s) shall have two (2) Federal Signal GHScene, dual lamp, 40 watt total per head scene lights with adjustable lamps and a Federal Signal chrome trim.

The scene lights shall be operated by a switch located in the driver's area of the cab.

BODY REAR SCENE LIGHTS

There shall be rear scene lights installed as high as possible on both sides of the rear of the apparatus body.

The lighting position(s) shall have two (2) Federal Signal GHScene, dual lamp, 40 watt total per head scene lights with adjustable lamps and a Federal Signal chrome trim.

The rear scene lights shall be operated by a switch located beneath the left rear step. If the scene light is left in the 'ON' position the lights shall automatically turn off when the truck is parking brake is released.

ROAD SAFETY KIT

One (1) 2-1/2# ABC DOT Approved fire extinguisher shall be provided. The fire extinguisher shall be shipped loose with the chassis.

One (1) set of DOT approved hazard triangles shall be supplied with the chassis. They shall be stored in a plastic case and shipped loose with the chassis.

EXTERIOR GRAB HANDLES

The cab shall have a bright anodized extruded aluminum 24" grab handles at each door position. The aluminum shall be bright anodized for long service. Molded rubber gaskets shall be installed under the grab handles to protect the painted surface of the cab.

FRONT GRILLE

A stainless steel front grille shall be installed on the front cab face. The front grille shall have a radiator rock guard to assist in preventing damage to the radiator core.

The cab shall have one (1) engine "hot" air exhaust and one (1) engine air cleaner intake, on each side of the cab. These openings shall be covered with a honey comb wire screen and shall have a bright polished stainless steel outer grille.

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CAB MUDFLAPS

Mud flaps shall be installed behind the front tires. These mud flaps shall be a minimum of 22" wide to protect the underneath of the cab and body.

CAB GROUND LIGHTING

One (1) light shall be mounted beneath each door. These lights shall be designed to provide illumination on areas under the driver and crew riding area exits. All cab ground lights shall switchable and shall automatically activate when any cab exit door is opened.

MIRRORS

16 1/2" X 7" stainless steel heated, remote control mirror heads shall be mounted on spring loaded retractable mirror arms. Includes a 5-1/2" x 8.5" convex mirror head.

UNDER CAB ENGINE MAINTENANCE LIGHTS

Two (2) engine maintenance lights shall be supplied beneath the cab. These lights shall illuminate automatically when the cab is tilted to the full tilt position.

WHEEL WELL LINERS

To reduce road splash and allow for easy cleaning, bolt in front wheel well liners are to be installed. Stainless steel material is to be used for the liner for ease of cleaning and eliminate corrosive action created by road debris. The wheel well liners are to be a minimum of 22 inches in width.

STAINLESS CAB FENDERETTES

To reduce road splash on the cab sides, polished stainless steel fenderettes shall be installed around each the wheel opening.

EXTERIOR REAR WALL DIAMOND PLATE OVERLAY

The cab exterior rear wall shall be covered with a single sheet of bright aluminum tread plate to protect the back of the cab from scratches.

CAB TILT SYSTEM

The cab shall tilt a minimum of 45 degrees for ease of serving. Tilting shall be accomplished by means of a tilt pump connected to two (2) heavy duty lift cylinders. It shall be equipped with a positive locking mechanism (service lock) to hold the cab in the full tilt position. Release of the service lock shall be by means of a pull type cable assembly. The cylinders shall have a velocity fuse at the base to prevent the cab from falling in the event of a hydraulic hose failure. The cab shall be capable of tilting 90 degrees for major engine service, if necessary. The 90 degree cab tilt shall be accomplished by removing the cab cylinder pins, removing one bolt in the steering shaft, and removing the front bumper and treadplate.

The cab shall have a three (3) point cab locking system.

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The rear cab lock shall be center point mounted to prevent normal twist of the chassis from affecting the cab mounting, cab structure and windshield areas of the cab. This rear cab lock shall be mounted on a chassis crossmember to provide a stable platform for the locking system. The cab lock shall be mounted to a baseplate that is fastened to rubber isolators to reduce road noise and provide additional movement of the cab lock. This locking system shall automatically open prior to the cab tilting and automatically relatch when the cab is lowered completely into the travel position.

Two (2) outboard frame mounted urethane "V" blocks shall be provided at the rear of the cab. These dual purpose mounts shall align the cab upon lowering as well as provide non-latching support for the cab in the down position. With this system, extreme chassis twist shall allow the cab to move independently of the rear cab supports, reducing the structural stress damage often caused by outboard dual cab locking systems.

An electric-over-hydraulic cab tilt pump shall be supplied. This pump shall have a remote control for cab tilting operation. The control shall be "safety-yellow" in color.

CAB TILT INTERLOCK

The cab lift system shall have a cab tilt interlock. The cab tilt shall not be able to be activated unless the master battery switch is in the on position with the parking brake set.

DRIVER'S SEATING POSITION

The seat shall be Bostrom or Seats, Inc. 911, non-suspension, high back seat with a 4" double locking fore and aft slide adjustment.

A red 3-point, shoulder harness type seat belt shall be supplied for the seat.

OFFICER'S SEATING POSITION

The seat shall be Bostrom or Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest. The seat shall contain a SCBA filler pad for when the bottle is not in use.

A red 3-point, shoulder harness type seat belt shall be supplied for the seat.

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, or Bostrom equivalent (SCBA) self-contained breathing apparatus brackets mounted in the cab. The WALKAWAY brackets shall included a QLM-U-USM pull release mounted beneath the seat cushion in the center of the seat cushion.

CREW AREA - REAR FACING LEFT OUTBOARD SEAT POSITION

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest.

A red lap type, metal to metal quick release seat belt, with automatic seat belt retractor shall be provided for the seat.

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, or Bostrom equivalent (SCBA) self-contained breathing apparatus brackets mounted in the cab. The WALKAWAY brackets shall included

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a QLM-U-USM pull release mounted beneath the seat cushion in the center of the seat cushion.

CREW AREA - REAR FACING RIGHT OUTBOARD SEAT POSITION

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest.

A red lap type, metal to metal quick release seat belt, with automatic seat belt retractor shall be provided for the seat.

WALKAWAY BRACKET

There shall be ZICO positive locking mechanical WALKAWAY, QLM-U, or Bostrom equivalent (SCBA) self-contained breathing apparatus brackets mounted in the cab. The WALKAWAY brackets shall included a QLM-U-USM pull release mounted beneath the seat cushion in the center of the seat cushion.

IMPERIAL 1200 MATERIAL

The chassis seats shall have Imperial 1200, durable polyester, material in lieu of the standard vinyl. The seats shall have the Imperial 1200 material in the following applicable areas.

- Seat Base Top
- Seat Base Sides
- Seat Back Support Face
- Seat Back Support Sides
- Seat Headrests

SEAT BELT WARNING LABELS

The cab shall be equipped with two (2) seat belt warning labels. These labels are to be in full view of the occupants in the seated position.

VEHICLE DATA RECORDER

Apparatus shall be equipped with a Class1 “Vehicle Data Recorder and Seat Belt Warning System” (VDR/SBW), or equal, that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and antilock brake (ABS) modules mounted on the apparatus. The VDR/SBW will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train’s J1939 data and 14.1.3.10 (Seat Belt Warning) using the Class1 “Seat Belt Input Module” for seat occupied and belt status information.

The VDR data shall be downloadable by USB cable to a computer using either Microsoft™ or Apple™ Operating Systems using Class 1/ O.E.M. supplied reporting software.

SEAT BELT WARNING SYSTEM

There shall be a seat belt indicator system supplied in the cab. The indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

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A display panel shall be supplied in the dash area. The panel shall have an audible indicators and a red light display to indicate that a seat belt has not been fastened.

SEAT BELT WARNING SYSTEM - MONITOR

Mounted in the overhead console in the driver's area the indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

EMS STORAGE CABINET

A storage compartment, full height x 40" W x 20" D shall be provided on the rear wall with the door opening facing the front of the cab.

The cabinet shall be bolted construction made of 304 stainless steel and with a brushed finish.

The EMS Cabinet shall be installed on centered on the rear wall.

The EMS cabinet shall be provided with a Gortite, or equal, roll up door facing forward. The roll up door shall be constructed of double sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1-3/8" wide x 3/8" thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slat to insure a weather tight seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end.

A vertically hinged door shall be furnished on each end so medical bag, etc could be removed without climbing into the cab.

Side channels for each door to ride in shall be provided with santoprene seals to prevent dirt and moisture from entering the exterior compartment. A single piece top drip rail shall be provided with a santoprene seal to prevent dirt and moisture from entering the compartment when the door is fully closed. The bottom of each door shall also be provided with a santoprene seal. All nonmetallic parts shall be glass filled nylon.

The door latches shall be keyed locking stainless steel lift bars and shall be provided with a magnetic door switch system. One key to fit all doors.

EMS CABNIET LIGHTING

Two (2) LED strip lights shall be provided mounted inside the cabinet, one (1) on each side of the roll up door. These lights shall be controlled by the door switch for illumination.

ALUMINUM SHELVES - ADJUSTABLE - EMS CABINET

Three (3) adjustable aluminum shelves shall be installed and shall have a flange 1-1/2" deep and a minimum material thickness of .190" up to 30" in length. Each shelf shall be fully adjustable in height and held in place by extruded uprights.

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110 VOLT RECEPTACLE

One (1) 120-volt AC, single receptacle shall be provided with a weatherproof cover centered in the upper portion of the EMS cabinet. This receptacle shall be wired to the shoreline connection for charging devices stored in the EMS cabinet.

The electrical outlet shall be a NEMA 5-15, rated at 120-volt AC, 15-amp, duplex straight blade receptacle.

AIR HORNS

Dual stutter tone air horns shall be recessed into the front bumper, one each side.

One (1) foot switch for the air horns shall be provided on the left side of the driver's side cab floor and one (1) on the right side of the officer's side cab floor.

AIR HORN IGNITION CONTROL

To eliminate inadvertent operation the chassis air horns shall be operable only when the battery selector and ignition switch are in the "ON" position.

HORN / ELECTRONIC SIREN ELECTOR SWITCH

A switch shall be supplied for the driver to control either the electric and air horns or the electronic siren from the steering wheel horn button. This switch shall be clearly labeled with a back-lit legend.

ELECTRONIC SIREN

A Federal Signal 100 watt electronic siren control with microphone, model #PA300, shall be provided.

The siren control shall be recess mounted in the cab ceiling console, within reach of the driver and officer.

SIREN SPEAKERS

There shall be two (2) Cast Products polished aluminum 100 watt speakers provided. The speakers shall be recessed into the front bumper, one each side, immediately outboard of the chassis frame rails.

Q2B MECHANICAL SIREN

A FEDERAL Q2B siren shall be mounted recessed in the cab front grille or on the front bumper extension.

One (1) foot switch for the siren shall be provided on the left side of the driver's side cab floor and one (1) on the right side of the officer's side cab floor.

MASTER WARNING LIGHT CONTROL

To eliminate inadvertent operation the Q2B shall be operable only when the Master Warning Light switch is in the "ON" position.

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A momentary rocker switch shall be provided in the driver's switch panel for operation of the siren brake. This switch shall be backlit with the legend "SIREN BRAKE".

GENERATOR

The generator unit shall be mounted in the dunnage area of the pump compartment.

An Onan model 6.0RBAA, 6 KW hydraulic generator system shall be supplied and installed on the apparatus. The generator system shall be capable of producing 6 KW, single phase, 120/240- volts at 60 hertz regardless of engine RPM and shall be equipped with an automatic voltage regulator to maintain nominal output voltage (120/240-volts AC) under varying generator loads. The generator shall be able to remotely turn the system's full KW off and on without regard to engine RPM or electrical loads by the use of multiple 12 VDC switches.

An integral oil to air heat exchanger shall cool the hydraulic fluid before being returned to the reservoir. A hydraulic pump shall power the generator motor and is driven by a power takeoff on the vehicle transmission. The pump shall maintain a constant flow and nominal generator frequency (60 Hz).

The hydraulic fluid reservoir shall have a three gallon capacity and shall be equipped with a full flow 6 micron oil filter, oil level sight glass, filter pressure cap, breather filter, and oil fill cap. The generator system shall use Dextron III hydraulic fluid.

The generator display module shall display generator output voltage, frequency and current. The module shall also display the temperature of the hydraulic fluid returning to the fluid reservoir and the number of hours run (hour meter). The display module shall be located in the L 1 compartment adjacent to the apparatus load center. The load center shall be connected to the generator system. A generator on/off switch shall be located in the cab in a location convenient to the driver.

POWER TAKE OFF

A "Hot Shift" PTO unit shall be provided and installed. A switch to control the operation of the PTO shall be installed in the cab in a location convenient to the driver.

120/240-VOLT AC NFPA LOAD TEST

Electrical System Testing.
The wiring and associated equipment shall be tested by the apparatus manufacturer or the installer of the line voltage system.

The wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for 1 minute. The test shall be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test shall be conducted after all body work has been completed. The dielectric tester shall have a 500 volt-amperes (VA) or larger transformer, with a sinusoidal output voltage that can be verified.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles in order to determine that connections have been properly made.

Operational Test
The apparatus manufacturer shall perform the following operational test and shall certify that the power

source and any devices that are attached to the line voltage electrical systems are properly connected and in working order.

The prime mover shall be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating.

The following information shall be recorded:
(1) The cranking time until the prime mover starts and runs, if applicable
(2) The voltage, frequency, and amperes at continuous full rated load
(3) The prime mover oil pressure, water temperature, transmission temperature, hydraulic temperature, and the battery charge rate, as applicable
(4) The ambient temperature and altitude

The power source shall be operated by the apparatus manufacturer at 100 percent of the systems continuous rated wattage as specified on the Power Source Specification Label for a minimum of 2 hours. Testing with a resistive load bank shall be permitted. The conditions specified in 21-14.4.1(2) and (3) shall be recorded at least every 1/2 hour during the test.

If the apparatus is equipped with a fire pump, this 2-hour test shall be completed with the fire pump pumping at 100 percent capacity at 150-psi (1035 kPa) net pump pressure. The 2-hour test shall be permitted to be run concurrently with the pump certification test required in 14-13.1.

Where the line voltage power is derived from the vehicles low-voltage system, the minimum continuous electrical load as defined in Chapter 11 shall be applied to the low-voltage electrical system during the operational test. Any termination of line voltage power by the low-voltage load management system shall be noted, and the duration of the periods of line voltage power source shutdown shall be recorded.

Vehicle support systems that are required to maintain the power source in operation shall remain within their required operational parameters.

The results of the tests listed in this section shall be supplied to the purchaser at the time of delivery.

LOAD CENTER PANEL

A Square D Homeline circuit breaker panel shall be provided in the apparatus body. All breakers shall be properly labeled. The generator shall be hard wired to the circuit breaker panel. The circuit breaker panel shall be mounted so as to not interfere with shelves or trays, if specified. The load center panel cover shall be accessible with hand tools.

The load center panel mounting location shall be in the L1 compartment.

WEATHER RESISTANT TUBING

The AC wiring in the apparatus body shall be installed in seal tite weather resistant conduit.

CIRCUIT BREAKERS

Manual reset 120-volt AC circuit breakers shall be provided in the load center as required by the circuits installed by the apparatus manufacturer.

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Manual reset 240-volt AC circuit breakers shall be provided in the load center as required by the circuits installed by the apparatus manufacturer.

FORWARD FACING BROW LIGHT

One (1) brow light shall be provided and mounted centered on the leading edge of the cab roof facing forward.

There shall be One (1) Fire Research Focus FCA800 Series roof mount lamp head provided. The mounting bracket shall attach to the light head chosen for the mounting position. Wiring shall exit from a weatherproof strain relief on the lamp head.

The lamp head shall have one (1) quartz halogen 750 watt 120 volt bulb. The bulb will draw 6.3 amps and generate 19,600 lumens. The bulb shall be accessible through the front. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head shall incorporate heat-dissipating fins and be no more than 5" deep by 3 3/8" high by 10" wide. Lamp head and mounting arm shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

The brow light shall have a white housing

One (1) 12-volt, switch shall be wired through 120-volt relay and shall be located in the cab switch panel for the apparatus body quartz light as selected.

LEFT FRONT QUARTZ LIGHT

The following light shall be provided mounted on the left front corner of the body or rear of cab:

Fire Research Focus model FCA100-S75 lamp head shall be provided. The lamp head mounting arm shall terminate in 3/4" NPT threads. Wiring shall extend from the lamp head mounting arm bottom.

The lamp head shall have one (1) quartz halogen 750 watt 120 volt bulb. The bulb will draw 6.3 amps and generate 19,600 lumens. The bulb shall be accessible through the front. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall incorporate heat-dissipating fins and be no more than 5" deep by 3 3/8" high by 10" wide. Lamp head and mounting arm shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

The light head shall be mounted on a side mount push up telescopic pole. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 3 1/2" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

RIGHT FRONT QUARTZ LIGHT

The following light shall be provided mounted on the right front corner of the body or rear of cab,:

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Fire Research Focus model FCA100-S75 lamp head shall be provided. The lamp head mounting arm shall terminate in 3/4" NPT threads. Wiring shall extend from the lamp head mounting arm bottom.

The lamp head shall have one (1) quartz halogen 750 watt 120 volt bulb. The bulb will draw 6.3 amps and generate 19,600 lumens. The bulb shall be accessible through the front. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall incorporate heat-dissipating fins and be no more than 5" deep by 3 3/8" high by 10" wide. Lamp head and mounting arm shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

The light head shall be mounted on a side mount push up telescopic pole. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 3 1/2" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

ELECTRIC CORD REEL

One (1) Hannay model ECR1616-17-18 electric rewind cord reel(s) shall be supplied and installed.

The cable reel(s) shall be a 12-volt electric rewind type.

One hundred fifty feet (150') of 10/3 SOOW (yellow) cord shall be installed on one (1) reel(s), complete with an HS-3 ball stop.

One (1) Akron junction box, model EJB shall be provided. The junction box is to be powder coated safety yellow and be provided with rubber feet on the bottom of the box.
There shall be four L5-20 twist lock outlets furnished.

There shall be a captive roller system furnished for the cord reel. The roller assembly shall be mounted on the dunnage side wall. If the body selection requires ladders on beam the right side cord reel is elevated and the rollers are mounted on the cord reel assembly.

The cord reel shall be equipped with a weather resistant push button switch mounted on the side of the pump module.

PUMP COMPARTMENT

The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. It shall be a fabricated assembly of stainless steel tubing, angles and channels, which does not support the fire pump and or running boards. The pump compartment shall be mounted onto the chassis through rubber biscuits in a four point pattern to allow for a chassis frame twist.

Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly and shall have an approximate width of 47". The pump compartment shall be a modular design.

A stainless steel framework shall provide the support for the mounting of the pump lower panels, speedlay hose beds, and pump access doors.

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An upper stainless steel assembly shall encompass the top mount pump operator's panel. Stainless steel structure shall be provided as a support behind all control handles enabling a firm foundation for operation of the valve control.

An upper stainless steel assembly shall encompass the dunnage compartment and area for the deck gun if provided. The floor of this section shall be a bolt-on design to provide access for major repairs and or service.

PUMP PANEL WALKWAY - ALUMINUM DIAMOND PLATE

A walkway/running board area, 96" left to right x 21" minimum front to back, shall be provided with the top mount pump module. The walkway shall be separate from the pump panel so that each may flex independently of the other and allow water to flow away from the operator.

Separation of the walkway and support structure from the pump compartment is desired to provide field service of the walkway without major repairs to the pump compartment in the event of an accident. The walkway supports shall be a fabricated assembly of gussets and channels. The walkway support structure shall be bolted directly to the chassis frame rails to provide proper support.

RUNNING BOARDS

The running boards shall be separate from the hose body, compartments, and pump compartment so that each may flex independently of the other and to allow water to flow freely away from the running board area. Separation of the running boards and support structure from the hose body, compartments and pump compartment is desired to provide field service of the running board without major repairs to the pump compartment in the event of an accident.

The steel running board supports shall be bolted directly to the chassis frame rails to provide proper support. The running board step surface shall be covered in aluminum treadplate meeting the current revision of NFPA 1901 for step requirements.

RUNNING BOARD HOSEWELL

The left and right running boards shall be provided with an integral smooth plate hose well with a 1.5 cubic feet capacity.

Two (2) straps shall be provided for the running board hosewell to secure hose in the hosewell.

WALKWAY STORAGE COMPARTMENTS

Two (2) enclosed storage compartments shall be provided and installed below the top mount walkway, mounted one (1) each on the driver's and officer's side of the apparatus. Each compartment shall have the walls and floor be stainless steel and shall include an aluminum treadplate vertically hinged door, full length stainless steel piano hinge and a "D" type handle/latch.

WALKWAY LIGHTS

Two (2) clear lights shall be mounted on the front of the top operated pump module to provide walkway illumination. There shall be one (1) light mounted outboard on each side of the module or speedlay module if so equipped.

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DUNNAGE COMPARTMENT OVER PUMP

There shall be a dunnage compartment furnished on top of the pump module. The floor shall be bolted in place and removable for access to the fire pump components for major service.

Two (2) bright anodized extruded aluminum grab rails shall be provided, one (1) each side of the pump house on the side of the dunnage compartment just below the top edge mounted horizontal to provide easy access to the dunnage compartment. Molded rubber gaskets shall be installed under the grab handles to protect the surface of the compartment.

The dunnage area of the pump house shall have approximate dimensions of 68" wide x 19" deep x 43" front to back.

WALKWAY GRABRAILS

Two (2) bright anodized extruded aluminum grab rails shall be provided, one (1) each side of the pump house on top of the speedlay area, to provide easy entry and egress from the top operators position. Molded rubber gaskets shall be installed under the grab handles to protect the surface of the compartment.

PUMP COMPARTMENT WORK LIGHT

The pump compartment shall have one (1) Truck Lite, model 40 clear work light to provide illumination inside the pump compartment. The light shall have a weather resistant, toggle style on/off switch located inside the pump compartment adjacent to the left service door area. The power for the pump module light shall be switched thru the battery master switch.

PUMP SERVICE ACCESS REQUIREMENTS

It is the opinion that service access to the pump, valves, gauges and controls are of the utmost importance. Special consideration will be taken when evaluating the pump module design of the fire department. Pump panels that offer little to no access without the use of tools shall not be considered compliant with this requirement.

TOP MOUNT PUMP CONTROL PANEL

All pump controls and gauges shall be located above the fire pump in a top mounted operator's control panel and properly identified. The layout of the pump control panel shall be ergonomically efficient and systematically organized. The pump operator's panel shall be removable in one (1) section for ease of maintenance. The gauge panel shall contain a panel for mounting of all instruments, engine monitoring system, and pressure control system. The gauge panel shall be a removable bolt-on single panel to allow access to all gauge tubing, switch, and control wiring. The gauge panel exterior shall be made of 10-gauge stainless steel.

The lower portion of the panel shall contain the controls for all of the inlets and outlets. The controls for all of the drains shall be located on the side panels. All inlet and outlet controls shall be Class 1 lever type locking top mount controls.

Handles for the top mount controls shall be chrome plated zinc twist-lock handles with a recessed area for 2" diameter round identifications tags.

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Top control connections to each 2-1/2" and larger discharge valve shall be made by the use of a stainless aircraft cable with stainless steel mounting brackets and hardware. Top controlled connections to valves larger than 2-1/2" by means of relay arms with sold rods are not acceptable.

There shall be two (2) pump house service doors located in the upper portion of the right and left side pump panels. These panels shall be as large as possible and shall be constructed of brushed stainless steel. The access doors shall each have two (2) thumb latches. Each service panel door shall provide an opening minimum size of 41 inches wide by 14 inches in height.

PUMP PANEL IDENTIFICATION TAGS

The identification tag for each valve shall be recessed in the face of the control handle. All discharges shall have color-coded plastic identification tags, with each discharge having its own unique color. Color-coding shall include the labeling of the outlet and the drain for each corresponding discharge.

PUMP PANEL FINISH

All stainless panels used in the construction of the pump house shall have a brushed finish.

CONTROLS AND GAUGES

The following shall be provided on the pump and gauge panels in a neat and orderly fashion. The gauge panel shall include the following:

ENFO-III ENGINE MESSAGE CENTER

The apparatus shall be equipped with the Class1 ENFO III Engine Information Display for the pump panel. The ENFO III shall provide engine RPM, system voltage display and alarm, engine oil pressure display and alarm, and engine temperature display and alarm. The ENFO III uses the SAE J-1587 data bus for its information and does not require any additional sensors to be mounted. The message center shall provide the following:

Engine Oil Pressure: With visual LED message and audible warning.

Engine Water Temperature: With visual LED message and audible warning.

Voltmeter: With visual LED message and audible warning.

Tachometer: With visual LED message.

CLASS 1 PRESSURE GOVERNOR - ELECTRONIC ENGINE CONTROL

An electronic control for engine speed based upon a preselect for "RPM" or pump "Pressure". The electronic control for the engine is to operate as a pressure sensor (regulating) governor (PSG) eliminating any need for a relief valve on the discharge side of the pump. The control shall have the following controls and display:

Mode select button for "RPM" or pump "Pressure"
Green light to indicate when "RPM" mode is selected.
Green light to indicate when "Pressure" mode is selected.
Idle select button to immediately return the engine to idle, regardless of mode of operation.
Preset button to increase the engine speed or pump pressure to a preset condition.
Increase button to increase engine speed or pump pressure based upon mode selected.

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Decrease button to decrease engine speed (RPM) or pump pressure based upon mode selected.
Green "Pump Engaged" light
Green "Okay to Pump" light
Green "Throttle Ready" light
Visual LED Message Center to provide engine speed (RPM) or pump pressure based upon mode selected.

MASTER GAUGES

The pump master vacuum and pressure gauges shall be 4-1/2" in diameter with white dial face gauges with black lettering and markings.

The master vacuum gauge shall be a compound style gauge with a vacuum/pressure range of -30" - 0 - 400 psig with the dial face of the gauge labeled in black INTAKE.

The master pressure gauge shall be provided with a range of 0-400 psig and the dial face of the gauge labeled in black DISCHARGE.

The gauge accuracy for the gauge shall be plus or minus 1% of full scale per ANSI B40.1, Grade 1A.

A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

MASTER GAUGE TEST PORTS

Adjacent to each gauge there shall be a pressure tap to provide simultaneous reading of the vacuum and pressure exerted on the individual gauge.

PRESSURE GAUGES

Each line pressure gauge shall be mounted immediately above the control for the corresponding valve. The individual line *pres*sure gauges for the discharges shall be 2-1/2" in diameter with white dial face gauges with black lettering and markings. The gauges shall be a compound style gauge with a vacuum/pressure range of 0 - 400 psig.

The gauge accuracy for the gauge shall be plus or minus 2% mid-scale, plus or minus 3% balance, per ANSI B40.1, Grade 1A.

A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

All line pressure gauges shall be mounted adjacent to the corresponding discharge control tee handles.

PUMP OPERATION HOURMETER

A pump hourmeter shall be supplied. The hourmeter shall be environmentally sealed to prevent moisture from entering the instrument. The face shall provide a display of the total cumulative hours of pump engagement. The hourmeter shall be protected by being located inside the pump module.

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PUMP PANEL LIGHTING

The pump operator's panel shall be supplied with a LED light system. LED strip lights with a stainless steel hood shall be mounted across the top of the pump panel gauges and controls.

LED strip lights with a stainless steel hood shall be provided on each side of the pump module above the side panels.

All pump module lighting shall illuminate when the parking brake is engaged.

AIR HORN ACTIVATION SWITCH

A switch shall be located on the pump panel to activate the chassis air horn. The switch shall be a momentary pushbutton type switch with a red cover. The switch shall be supplied with the proper identification label.

WATER TANK LEVEL GAUGE

The apparatus shall be equipped with a Class 1 "Inteli-Tank" Tank Level Gauge, or equal, for indicating water level. The tank level gauge shall indicate the liquid level on an easy to read LED display and show increments of 1/8 tank capacities. The tank level gauge system shall include a pressure transducer that shall be mounted on the outside of the tank in an easily accessible area, a super bright LED four-light display with a visual indication at nine (9) accurate levels, and a set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power.

FOAM TANK LEVEL GAUGE

The apparatus shall be equipped with a Class 1 "Inteli-Tank" foam tank level gauge for indicating foam level. The foam tank level gauge shall indicate the foam concentrate level on an easy to read LED display and show increments of 1/8 tank capacity. The foam tank level gauge system shall include:

A pressure transducer that shall be mounted on the outside of the tank in an easily accessible area. A super bright LED four-light display with a visual indication at nine accurate levels. A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power.

HEAT EXCHANGER DISCHARGE

A gated discharge line shall be installed to provide water from the fire pump to the chassis supplied heat exchanger to assist in engine cooling during pumping operations. The heat exchanger line shall be controlled at the pump operator's panel with a Class 1 valve.

PUMP MANUFACTURER AND MODEL

The pump shall be a Hale Q-MAX model 1500 gpm midship pump.

PUMP RATING AND TEST REQUIREMENTS

The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 1500 gallons per minute (U.S. GPM), NFPA 1901 rated performance. The pump

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shall deliver the percentage of rated discharge at pressures indicated below:

100 percent of rated capacity at 150 pounds net pressure
70 percent of rated capacity at 200 pounds net pressure
50 percent of rated capacity at 250 pounds net pressure
100 percent of rated capacity at 165 pounds net pressure

The entire pump shall be assembled and tested at the pump manufacturer's factory. The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

PUMP COOLING LINE

A 3/8" cooling line shall be installed to recirculate water from the pump back through the pump transfer case, to cool the pump during prolonged pumping operations. The cooling line shall be controlled at the operator's position with a Class 1 valve.

PRIMING PUMP

The priming pump shall be a positive displacement vane type, oil-less, electrically driven, and conform to standards outlined in NFPA 1901. One priming control shall both start the priming motor and open the priming valve.

PNEUMATIC PUMP SHIFT

The pump shift shall be air operated and shall incorporate an air double action piston to shift from road to pump and back. A manual or electric operated pump shift mechanism is not acceptable. The pump shift switch shall be mounted in the cab and identified as "AIR PUMP SHIFT" and include instructions permanently inscribed on the pump shift switch plate. The in-cab operating valve uses a spring loaded locking collar to prevent it from accidentally being moved.

The pump shift control assembly shall incorporate an indicating light system, which will notify the operator when the shift has been completed to PUMP and when the chassis transmission is in correct pumping gear.

The switch that activates the lights must be mounted on the pump transmission and positioned so that the pump shift arm activates the switch only when the shift arm has completed its full travel into PUMP position. An additional indicator light shall be provided adjacent to the throttle control at the pump operator's panel to indicate a completion of the pump shift.

MECHANICAL SEAL

The fire pump shall be provided with a mechanical pump seal. One (1) only required on the suction, inboard, side of the pump. The mechanical seal shall be two inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber boot, and a tungsten carbide seat with Teflon backup seal.

ANODE SYSTEM

To reduce the effect of galvanic action the pump shall be equipped with two zinc (2) anodes. One anode is to be installed on the inlet [suction] side of the system and one anode is to be installed on the pressure [outlet]

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side of the system.

THERMAL PROTECTION

The pump shall be equipped with a Hale TRV-L, thermal protection device, which monitors the water temperature of the pump and relieves water when the temperature inside the pump exceeds the preset value of the relief valve (120 degrees F / 49 degrees C).

The TRV shall automatically dump a controlled amount of water to the atmosphere or back to the tank when the pump water temperature exceeds the preset value. The valve shall automatically close when the water temperature cools to below the preset value.

A chrome panel placard with a visual warning lamp and test button shall be provided on the operator's panel. The warning light shall illuminate when the Thermal Relief Valve is open and discharging water.

MASTER DRAIN

The apparatus shall be equipped with a Manual Master Pump Drain for draining of the lower pump cavities, volute and selected water-carrying lines and accessories. The all brass and stainless steel construction allows for operation up to 600 psi.

PUMP CERTIFICATION TEST

The apparatus shall be certified to the requirements of NFPA 1901 prior to delivery of the completed apparatus. The certificate shall be furnished with the apparatus on delivery.

PUMP MANUALS

Two (2) sets of fire pump service and operation manuals shall be provided with the completed apparatus.

LEFT SIDE STEAMER INLET

There shall be one (1) steamer inlet furnished on the left side pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

A six (6) inch chrome plated cap with long handles shall be supplied. The cap shall be capable of withstanding 500 PSI.

RIGHT SIDE STEAMER INLET

There shall be one (1) steamer inlet furnished on the right side pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

HALE MIV VALVE - RIGHT SIDE

There shall be a full flow Hale MIV-M valve furnished on the right side pump panel. The gate valve shall have a manually operated hand wheel control on the valve. The inlet valve shall be a full flow butterfly type valve designed to mount on the fire pump between the suction extension and suction tube behind the pump compartment panel. The valve shall not interfere with other suction or discharge openings on the fire pump

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or with pump operating controls when properly mounted.

STORZ ADAPTER

One (1) 6" NST Female swivel thread with long handle 30-degree down to 5" Storz hard coated aluminum adapter shall be provided.

One (1) 5" Storz cap and chain with a suction gasket shall be provided.

LEFT SIDE INTAKE

There shall be an intake located on the left (street) side rear of the pump and shall contain:

A 2-1/2" intake shall be provided. The inlet shall have a 2-1/2" quarter-turn swing-out valve. The inlet shall be provided with a 2-1/2" NST female swivel that extends through the pump panel.

The inlet valve shall have a manual control handle located on the pump top operator's control panel.

One (1) 2-1/2" chrome plated rocker lug plug with chain shall be supplied.

SUCTION PRESSURE RELIEF VALVE

A, 2-1/2" NPT, relief valve shall be installed on the suction side of the pump and be preset at 125 psig. The relief valve shall have a working range of 50 psig to 200 psig. The valve shall be of stainless steel construction and include a stainless steel spring and rubber seat. The valve shall be normally closed and shall limit pressure in the pumping system. When excessive intake pressures are received, the water shall be directed below the body.

The discharge side of the intake relief valve shall be plumbed to the right side below the running boards, away from but, visible to the pump operator, and shall terminate with an unthreaded pipe. The adjustment control shall be located behind the street side pump panel.

The air bleeder valve shall be mounted on the lower right pump panel drain panel. Air bleeder valve connections shall have a restriction no larger than 3/4" (19 mm) to prevent water hammer when filling hose.

If an intake primer/bleeder selector is selected this valve will not be installed to reduce operator complexity.

DOUBLE SPEEDLAY HOSEBED

The speedlays shall be arranged at the front of the pump module. The #1 speedlay toward the top of the speedlay assembly and the #2 speedlay immediately below the first. The speedlays shall be 12" wide.

The top of the speedlay unit shall have a brushed stainless steel shelf to cover the upper hose area and to provide a working surface for the pump operator.

TOP SPEEDLAY

The top speedlay shall be equipped with a 1-1/2" male NST outlet. The speedlay shall be plumbed with 2" Schedule 40 stainless steel high pressure pipe. A 2" quarter turn ball valve shall be used to control water

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flow. The outlet shall be equipped with a 2" polished stainless steel 90 degree swivel with 1-1/2" male NST thread located in the hosebed.

This speedlay bed shall be capable of carrying two hundred fifty feet (250') of 1-3/4" double jacketed hose. The speedlay hosebed shall have inside dimensions of 10" wide x 10-1/2" tall x 72" wide.

The bottom speedlay shall be equipped with a 1-1/2" male NST outlet. The speedlay shall be plumbed with 2" Schedule 40 stainless steel high pressure pipe. A 2" quarter turn ball valve shall be used to control water flow. The outlet shall be equipped with a 2" polished stainless steel 90 degree swivel with 1-1/2" male NST thread located in the hosebed.

This speedlay bed shall be capable of carrying two hundred fifty feet (250') of 1-3/4" double jacketed hose. The speedlay hosebed shall have inside dimensions of 10" wide x 10-1/2" tall x 72" wide.

The speedlay valve controls shall be mounted on the operator's panel.

A 1/4 turn drain valve shall be installed on each speedlay. The valve shall be nickel plated with 3/4" NPT female inlet and outlet thread.

Two (2) removable aluminum hose trays shall be provided for the speedlay hose beds.

Poly guides shall be provided at the sides, upper and lower edges of each speedlay opening on both sides of the apparatus body to protect the hose and couplings.

DOUBLE SPEEDLAY HOSEBED WEBBING

Black webbing shall be provided over each side opening of the speedlay hosebeds, complete with Quick release fasteners.

The walkway side of the speedlay assembly shall have a bright finished aluminum front cover.

LEFT SIDE DISCHARGES

The discharges on the left (street) side of the pump panel shall contain:

Two (2) 2-1/2" discharge shall be provided. The discharge outlet shall have a 2-1/2" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2" NST male threads that extends through the pump panel.

A chrome plated 2-1/2" NSTF to 1-1/2" NSTM rocker lug reducer with cap and chain shall be furnished

RIGHT SIDE DISCHARGES

The discharges on the right (curb) side of the pump panel shall contain:

A 2-1/2" discharge shall be provided. The discharge outlet shall have a 2-1/2" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 2-1/2" NST male threads that extends through the pump panel.

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One (1) chrome plated, Class 1, 2-1/2" NSTF to 1-1/2" NSTM rocker lug reducer with cap and chain shall be furnished

The second discharge on the right (curb) side of the pump panel shall contain:

A 3" discharge shall be provided. The discharge outlet shall have a 3" quarter-turn swing-out valve. The discharge shall be provided with chrome plated 30-degree discharge elbow with 3" NST male threads that extends through the pump panel.

One (1) 3" NST Female Rigid Rocker to 5" Storz hard coated aluminum adapter shall be provided with a 5" Storz cap and chain with a suction gasket shall be provided.

REAR PRECONNECT - RIGHT SIDE

There shall be one (1) 2-1/2" discharge outlet located on the passenger side rear in the hose bed. The discharge outlet shall be plumbed with 2-1/2" ID, Schedule 40 stainless steel pipe and high pressure hose and have a 2-1/2" quarter-turn, swing out valve with control on pump operator's panel. There shall be a chrome plated 2-1/2" NST adapter.

BOOSTER HOSE REEL

See front bumper section on page #7

DELUGE RISER

A 3" diameter deluge riser shall be installed above the pump. The deluge outlet shall be plumbed with a 3" quarter-turn, swing out valve and 3" ID, Schedule 40 stainless steel piping. Deluge outlet shall have control on pump operator's panel.

A Class 1, 1/4 turn drain valve shall be installed. The valve shall be nickel plated with 3/4” NPT female inlet and outlet thread.

DECK GUN CONTROL - MANUAL VALVE

The 3" discharge outlet shall have a 3" slow close quarter-turn swing out valve. The discharge shall be plumbed with 3" Schedule 40 stainless steel piping with 3" NPT male thread. Control of outlet shall be accomplished using a manual, locking control on pump operator's panel.

An Elkhart #8297-98 "Stinger", direct mount, lift off style deck gun with 8298 top mount adapter shall be provided on a 3" deluge pipe. The deck gun shall be capable of 360 degree rotation in the deck mode. The #8297-98 shall be capable of flowing 1250 GPM when in the deck mode. The lift off deck gun shall have heavy duty dual lock pins when installed on the deluge pipe.

A 282A stream shaper and ST-194 quad stacked tips shall be provided with the monitor.

An Elkhart model SM-1000 "Select-O-Matic" nozzle designed for flows of 300 GPM to 1000 GPM @ 75 PSI. shall be provided with the apparatus.

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DRAIN DISCHARGES

The 3/4 inch drain valves shall be equipped with 90-degree fittings to direct the discharge water beneath the pump module away from the pump operator's panel.

AKRON BALL VALVES

All ball valves shall be manual control 1/4 turn Akron heavy duty valves with stainless steel ball unless specified otherwise.

The valves shall have an all cast brass body with flow optimizing stainless steel ball, and dual polymer seats. The valve shall be capable of dual directional flow while incorporating a self- locking ball feature using an automatic friction lock design and specially designed flow optimizing brass ball. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts.

TANK TO PUMP

The tank to pump piping shall be capable of delivering water to the pump at a rate of five hundred (500) gallons per minute. This flow shall be sustained while pumping to a minimum of 80% of the certified tank capacity with the apparatus on level ground. No exceptions are allowed to this section.

The tank to pump line shall run straight, without elbows, from the pump to the front face of the water tank and down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing. The tank to pump line shall be plumbed with 3" Schedule 40 stainless steel high pressure pipe.

A 3" ball valve shall be furnished from the tank to the pump complete with a flexible connection and shall be enclosed in the pump compartment. The 3" valve shall be stainless steel and have an interior stainless steel ball and shall have a locking manual control handle located on pump operator's panel. A built-in check valve shall be provided in the tank to pump supply line to prevent the unintentional back filling of the water tank through the line.

TANK REFILL

A 2" tank refill line shall be provided using a 2" quarter-turn full flow ball valve controlled from the pump operator's panel with a manual locking handle. The tank refill shall be plumbed with high pressure flexible piping and high pressure flexible piping stainless steel couplings.

FOAM SYSTEM

The foam system will operate as a Class A system.

A Hale "FoamLogix 2.1A" 2.1 GPM foam system shall be supplied on the apparatus. The apparatus shall be equipped with an automatic electronically controlled, direct injection, rotary gear pump, discharge side foam proportioning system. Foam proportioning operation shall be based on direct measurement of water flow, and remain consistent within the specified flows and pressures.

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SYSTEM REQUIREMENTS

The complete foam proportioning system shall include the following:

1) Foam Pump
2) Control System
3) Foam Concentrate Strainer
4) Integral Check Valve/Injector Fitting.
5) Flow meter
6) Control Cables
7) Low Tank Level Switch
8) Water Discharge Check Valves

FOAM PUMP

The foam proportioning system shall be compatible with Class A foam concentrates. The foam proportioning system shall be capable of delivering the rated foam concentrate flow with the above mentioned foam concentrate type. The foam proportioning system shall be based on an electric motor driven, rotary gear foam concentrate pump, rated at 2.1GPM (7.9 LPM) foam concentrate flow rate with maximum operating pressure of 400 PSIG (28 bar).

The foam pump/motor assembly shall be permanently attached to an apparatus mountable base plate. A foam concentrate flow meter shall be integral to the foam concentrate pump. The foam concentrate flow meter shall provide a signal to the electronic control unit to make sure the proper amount of foam concentrate is injected into the discharge stream. The entire base plate mounted assembly shall have electrical components sealed to NEMA 4X or equal for mounting in the apparatus pump compartment or any suitable location on the apparatus.

FOAM CONCENTRATE STRAINERS

Field serviceable foam concentrate strainers shall be provided in the foam concentrate suction line. When the strainer shall not be subject to flushing water pressure a plastic bodied in-line strainer shall be used. The strainer body shall be constructed of plastic with a stainless steel mesh screen and shall be compatible with Class A foam concentrates. A shutoff valve shall be provided to enable isolation of the strainer for service. The strainer shall be mounted in the pump compartment. The strainer shall be a low pressure device and shall not be subject to flush water pressure.

Where strainers are subject to flush water pressure, panel mounted field serviceable foam concentrate strainers rated at 500 PSIG (34 BAR) minimum shall be installed on the pump panel. The strainer body shall be constructed of brass with a chrome cap and an easily removable stainless steel mesh screen for field servicing. A 1-½ inch strainer with ¾ inch NPT connection ports shall be used for Class A foam concentrate.

INJECTOR FITTING AND CHECK VALVES

To prevent contamination of the foam concentrate supply, foam concentrate shall be injected into the water pump discharge stream through an integral check valve/injector fitting. The check valve/injector fitting shall be of one piece construction of brass and stainless steel. To prevent contamination of the water pump and apparatus booster tank wafer type check valves shall be installed in the water pump discharge piping prior to the foam injection point.

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FLOWMETER

A paddlewheel type flow meter shall monitor water flow in foam capable discharges. The flow meter body shall be constructed of bronze and the sensor assembly shall be locked into the tee with a pin and screw on cap. The flow meter shall have a 500 PSIG (34 BAR) pressure rating per NFPA requirements.

One (1) flow meter is required for proper operation of the foam proportioning system. Power for the flow meter sensor shall be provided through the electrically shielded cable set from the control unit. Flow meters having NPT threaded and Victaulic connections shall be used in the water discharge piping.

The flow meter selected shall be sized to adequately monitor the minimum and maximum flow expected in the foam capable discharges.

CONTROL CABLES

The cables for connection of the control unit, distribution box, flow meter sensor, flow meter display units, pressure transducers and feedback sensor shall be 100% electrically shielded molded male by female cordsets. The cordsets shall have the ability to connect together and total length shall not exceed 40 feet (12 meters). The connections shall be keyed to prevent mis-connection and improper system operation. Shielding shall be provided by an aluminized mylar shield within the PVC outer jacket. A drain wire shall be tied to one of the pins on each end of the cable. No externally attached ferrite beads shall be installed for the purpose of electrical shielding. Coupling nuts on the cordset ends shall be constructed of nickel coated brass. When properly connected the connections shall be sealed to NEMA 4X or equal.

LOW TANK LEVEL SWITCH

A low tank level switch shall be installed in the foam concentrate tank. The low tank level sensor shall be connected to the foam proportioning system to provide protection against dry running of the foam pump. The low tank level sensor shall be mounted on the side of the foam concentrate tank. The low tank level sensor and electrical connections shall be sealed to prevent infusion of foam concentrate into the wiring and possible short circuit of the tank level sensor.

FOAM SUPPLY

The foam proportioning system shall be supplied from a separate apparatus mounted foam concentrate storage tank. The tank shall be constructed of materials compatible with foam concentrates being used in the system. Provision shall be made for installation of low tank level sensors and routing of the wiring for the sensors. Tank capacity, venting, fill opening and foam outlet plumbing connections shall be in accordance with NFPA requirements.

DOCUMENTATION

The foam proportioning system when delivered to the end user shall include a foam concentrate compatibility list and two (2) Description, Installation and Operation Manuals. The foam proportioning system shall have a one (1) year limited manufacturer's warranty.

SINGLE TANK FOAM TANK REFILL SYSTEM

A truck mounted 12-volt foam tank refill system shall be provided and installed on the apparatus. The refill system shall provide the ability to automatically refill the foam tank from the ground without carrying foam

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solution up to the foam cell in the hose bed.

The refill system shall be activated by an on/off rocker switch provided on a control panel installed on the pump panel. The foam refill system will automatically shut off when the foam tank is full. The refill system quick connection shall be located beneath the pump panel running board to prevent foam from spilling onto the running board during connection operations.

System features:

- Weather proof on/of rocker switch with integral green power on indicator light
- Red refill PUMP ON indicator light
- Automatic tank fill shutoff, vertical or side mount float switches
- Thermally protected 12-volt motor
- Relay operated motor power circuit
- 5 gpm capacity @ 8 foot lift
- Self priming pump, can run dry and re-prime itself automatically
- Composite pump head with Buna-N diaphragm
- All corrosion resistant components
- Compatible with Class A or Class B foam concentrates
- Quick connect inlet hose with wand
- Suction inlet strainer

FOAM SYSTEM OUTLETS

The foam system shall be distributed into the following discharge outlets:

Two (2) 1-1/2" crosslay discharges.

One (1) front jumpline discharge.

FOAM SYSTEM CONTROLS

The system shall be equipped with an electronic control unit, suitable for installation on the pump operator panel as the single point of operation for the foam proportioning system. Incorporated within the control unit shall be a microprocessor that receives input from water flow meter while receiving foam concentrate pump output information from the foam concentrate flow meter. The microprocessor, through constant comparison of the flow signals, shall ensure the operator preset proportional amount of foam concentrate is injected into the discharge stream of the fire pump. The electronic control unit shall permit the pump operator to perform the following control and operation functions for the foam proportioning system:

Provide push-button ON/OFF control of foam proportioning system.
Provide push-button control of foam proportioning rates from 0.1% to 10.0% (1.0% on a 2.1A and 3.3 systems), in 0.1% increments.
Show real time flow rate of water or foam solution.
Show total volume of water or foam solution discharged during and after foam operations.
Show foam concentrate injection rate.
Show total amount of foam concentrate consumed.
Permit resetting of totalized values for water and foam concentrate.
Simulate water flow rates for manual operation, calibration and testing of foam system.

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Enable system setup and full range system diagnostic functions.
Indicate on LED bargraph foam concentrate is being injected and the foam system capacity.
Indicate on LED bargraph when system capacity is not within design parameters.
Store independent default values for Class A foam concentrate injection.
Flash a “low concentrate” warning when the foam concentrate tank runs low.
Flash a “no concentrate” warning and shut the system off when the foam tank is empty.
Flash a "low battery” warning when battery voltage is low enough to affect system operation.
Flash a "hot" warning when system is running hot due to low voltage or radiant heat.

A distribution box shall be attached to the base plate to provide ease of installation. The distribution box shall be sealed to a NEMA 4X or equal rating to permit installation in the pump compartment. Foam concentrate flow feedback shall be provided to the control unit through the distribution box by a sensor mounted in the foam pump body. Rotors in the foam discharge side of the foam pump shall provide the targets to pulse the sensor to generate a feedback signal.

The distribution box shall receive 12 volt direct current power from the apparatus electrical system as the only source of power to operate the system and power component sensors. Control power shall be distributed to the control unit, flow meter sensor and foam concentrate feedback sensor through a conductor in the 100% electrically shielded cable sets provided by the foam proportioner manufacturer. The microprocessor in the control unit shall process input signals from the flow meter sensor and foam feedback sensor to determine the proper duty cycle for the electric motor to run. The distribution box shall provide power to the electric motor, based on signals received from the control unit, at a variable rate to ensure that the correct proportion of foam concentrate, preset by the pump operator on the control unit, is injected into the water pump discharge stream. The distribution box shall have a main power control switch and over current protection for the foam proportioning system. All primary electrical wires for the foam concentrate system shall be type SXL or GXL (SAE J1128) per NFPA requirements. Electrical connections shall be made using heavy duty 5/16 inch diameter studs and nuts.

WATER TANK

The water tank shall be "L" shaped and shall have a maximum capacity of 900 US gallons.

TANK LID & FILL TOWER

The tank shall have a combination vent and fill tower. The fill tower shall be constructed of 1/2” thick Polyprene and shall be a minimum dimension of 8”x 8” outer perimeter. The tower shall have a 1/4” thick removable Polyprene; screen and a Polyprene hinged-type cover. Inside the fill tower, there shall be a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 pipe with a minimum ID of 4” that is designed to run through the tank, and shall be piped behind the rear axle beneath the tank.

The tank cover shall be constructed of recessed 1/2” thick white Polyprene & Mac226, stress relieved, UV stabilized material. A minimum of two lifting dowels shall be drilled and tapped to accommodate the lifting eyes.

OVERFLOW AND VENT PIPE

The fill tower shall be fitted with an integral 4" ID, Schedule 40 PVC combination overflow/vent pipe running from the fill tower through the tank to a 4" coupling flush mounted into the bottom of the tank to allow water to overflow beneath the chassis.

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The acceptable tank manufacturers are UPF or ProPoly.

The partitions shall be designed to provide maximum water flow and meet NFPA rules

TANK SUMP AND CONNECTIONS

There shall be one (1) sump standard per tank. The sump shall have a minimum 3" FNPT threaded outlet on the bottom for a drain plug. This shall be used as a combination clean out and drain. All tanks shall have an anti-swirl plate located above the dip tube.

There will be two (2) standard tank outlets: one for tank to sump suction line, and one for a tank fill line. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1,000 GPM. All auxiliary outlets and inlets must meet N.F.P.A. 1900 guidelines in effect at the time of manufacture.

EXTERNAL FOAM TANK

A thirty (30) gallon polypropylene foam concentrate tank shall be furnished.

The foam tank shall be plumbed to the on board "Class A" foam system. A drain valve shall be provided at the lowest point of the foam tank. The foam tank shall drain shall directly to the surface below the apparatus without contacting other body or chassis components. The following labels shall be attached to the foam tank:

"CLASS A FOAM TANK FILL"
"WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM"

TANK MOUNTING

A tank mounting cradle shall be supplied. The tank mounting cradle shall consist of a minimum of seven (7) crossmembers and two (2) full tank length longitudinal members. The tank shall rest on the tank mounting subframe, and shall be insulated from the sub-frame with a 2-1/2" wide rubber insulator. The tank shall sit cradle-mounted using four (4) corner angles of 8" x 8" x 4" x .250" welded directly to the tank sub-frame. The angles shall keep the tank from shifting left to right or front to rear. The tank is designed on the free-floating suspension principal and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The hosebed cross-braces shall act as water tank retainers. The water tank cradle shall be designed to be completely independent of the apparatus body to eliminate torsional stress loading in the body.

APPARATUS BODY DESIGN AND CONSTRUCTION

The apparatus body shall be built of stainless steel and shall be designed exclusively for Fire Service use. The overall body width shall be 100 inches wide and shall be constructed in accordance with current NFPA requirements. All metal work shall be free of sharp edges, objects or corners. No exceptions are allowed to this requirement.

The pump module is to be completely separate from the main body to prevent damage due to flexing.

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BODY MODULE CAPACITIES AND HOSEBED HEIGHT

The minimum capacity of the body module exterior compartments shall be 221 cubic feet.

The minimum capacity of the body hose bed shall be approximately 72 cubic feet.

The hose bed shall be approximately 36" from the rear step.

The body shall have an overall length of 148".

BODY MOUNTING SYSTEM

The body shall be mounted so the chassis can flex without damage occurring to the body structure or sheet metal.

REAR FRAME EXTENSION

The rear chassis frame extension system shall consist of a interwoven dual .625" thick steel drop frame extensions with a transverse 4" x 3" x .375" thick structural channel, and dual laminated .188" thick rear compartment and tailboard support tapered angles on each side of apparatus.

The rear frame extension shall be bolted to the chassis frame utilizing Grade 8 bolts and Grade C locknuts with hardened washers. For ease in replacement of damaged components in an accident there shall be no welding of components to the chassis frame.

Two (2) tow eyes with an eye diameter of not less than 3.5" shall be attached directly to the chassis frame extensions. The tow eyes shall be fabricated of .625" thick steel.

REAR TAILBOARD

A rear tailboard 12" deep shall be provided at the rear from "Laser Grip" stainless steel meeting NFPA 1901 step requirements. The tailboard shall provide protection for the side body compartments and shall provided recessed mounting for the rear ICC marker lights. It shall be bolted to the rear support structure.

COMPARTMENT DESIGN AND CONSTRUCTION

All compartments shall be manufactured from 12-gauge stainless steel with the vertical front and rear corner walls from 14-gauge, shall be of sweep out design and shall be bolted together. Stainless recessed round head bolts and stainless aircraft style "ESNA" nuts shall be applied with proper torque rating for each fastener. This type of construction shall greatly enhance the strength and ease of parts replacement in the event of damage and future modifications. Wherever possible, body bolts shall be hidden from plain view for appearance and ease of apparatus cleaning.

COMPARTMENT ROOF CONSTRUCTION

Each compartment top shall have a 12-gauge stainless roof section for supporting roof loads of up to 500 pounds per square foot without permanent roof deformation. The stainless roof sections shall attach the compartment rear wall and compartment vertical sides through a fastened joint creating a full perimeter compartment attachment of the stainless roof section.

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COMPARTMENT ROOF - TRIM CAP

A bright finished aluminum diamond plate cap shall be provided on the upper body. The diamond plate cap shall wrap the outer edges of the body, with a drip edge over the compartment door area.

COMPARTMENT VENTILATION

Each compartment shall be provided with a laser cut louver to provide adequate ventilation.

APPARATUS BODY HOSEBED

The hose bed shall be constructed in such a manner that will prevent damage to fire hose. The hose bed shall comply with the current NFPA requirements. The interior of the hose bed shall be free of projections such as nuts, sharp edges or brackets that may damage hose. The hose bed and walls shall be manufactured from stainless steel. No exceptions to this requirement are allowed.

An aluminum extrusion shall be installed over the rear opening of the hose bed to protect the body from wear. The hose bed bottom shall be fitted with removable slatted, ribbed 6" heavy-duty extruded aluminum floorboards.

ADJUSTABLE HOSE BED DIVIDERS

Two (2) adjustable hose bed dividers shall be provided. Each divider shall be fabricated from .250" thick smooth aluminum plate, 5052-H32 alloy. The rear end of each divider shall have a 3" radius corner and shall be sanded and deburred to prevent damage to hose.

There shall be two hand hold openings provided; One (1) at the rear in a vertical position and one (1) approximately 24 inches in from the rear in a horizontal position.

BACKBOARD STORAGE COMPARTMENT

A storage compartment shall be furnished in the hose bed, attached to the side of one of the hose bed dividers for the storage of one (1) backboard.

The compartment shall have interior dimensions of 4" x 17" x 75" deep and shall be enclosed and shall be provided with an opening at the rear of the apparatus. The opening shall be provided with a strap to secure the backboard.

HOSEBED COVER

A red vinyl hose bed cover shall be provided and designed to cover the entire main hose bed area. The cover shall be installed with "stretch cord type" fasteners along the sides of the hose bed. A sand filled flap shall be incorporated into the rear edge of the cover.

The hose bed cover rear flap shall have a positive locking device to meet the requirements of NFPA.

LEFT SIDE COMPARTMENT DIMENSIONS

The compartment sizes listed minimum desired.

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There shall be one (1) rescue style, full height, and full depth compartment ahead of the rear wheels. It shall have approximate dimensions of 48" wide x 63" high x 24" deep.

There shall be one (1) high side compartment centered over the rear wheels. It shall have approximate dimensions of 52" wide x 33" high x 24" deep.

There shall be one (1) rescue style, full height, and full depth compartment behind the rear wheels. It shall have approximate dimensions of 43" wide x 63" high x 24" deep.

FUEL FILL - SIDE BODY

The fuel fill shall be located in the rear fender area on the left side of the apparatus body. The spring loaded fuel fill door shall have "Diesel Fuel" laser cut in the face of the door. There shall be a vent line from the fuel tank to beneath the fuel cap to aid in fueling of the truck.

SCBA BOTTLE COMPARTMENTS

Four (4) SCBA bottle tube compartments shall be provided, two (2) in each side rear wheel well area. One (1) shall be located forward and one (1) located rearward of each single axle tire. Each compartment shall be constructed of molded plastic tubing and shall be provided with a hinged, cast aluminum door with a brushed finish.

RIGHT SIDE COMPARTMENT DIMENSIONS

There shall be one (1) rescue style, full height, and full depth compartment ahead of the rear wheels. It shall have approximate dimensions of 48" wide x 63" high x 24" deep.

There shall be one (1) high side reduced depth compartment centered over the rear wheels. It shall have approximate dimensions of 34" wide x 33" high x 12" deep, rearward of the hydraulic ladder rack support components.

There shall be one (1) rescue style, full height, and full depth compartment behind the rear wheels. It shall have approximate dimensions of 43" wide x 63" high x 24" deep.

REAR COMPARTMENT DIMENSIONS

There shall be one (1) half height compartment at the rear of the body. It shall have approximate dimensions of 48" wide x 29" high x 22" deep.

ROLLUP DOORS

All compartments shall be provided with a roll up door that shall be constructed of double sided aluminum extrusions connected with a ball and socket joint. The extrusions shall be 1-3/8" wide x 3/8" thick with satin anodized finishing. A flexible EDPM extrusion shall be provided between each slat to insure a weather tight seal. Aluminum extrusions shall be individually replaceable without disassembling the entire door by removing push out clips on each end.

The rear door latch shall be a non-locking stainless steel lift bar and shall be provided with a magnetic door ajar switch system.

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DEEP ALUMINUM SHELVES - ADJUSTABLE

Three (3) adjustable aluminum shelves shall be installed and shall have a flange 1-1/2" deep and a minimum material thickness of .190" up to 30" in length. Each shelf shall be adjustable in height and held in place by four (4) extruded uprights.

Location to be determined.

SHALLOW ALUMINUM SHELVES - ADJUSTABLE

Three (3) adjustable aluminum shelves shall be installed and shall have a flange 1-1/2" deep and a minimum material thickness of .190" up to 30" in length. Each shelf shall be adjustable in height and held in place by four (4) extruded uprights.

Location to be determined.

ALUMINUM TRAYS - PULL OUT

One (1) heavy duty pullout trays shall be installed and shall be equipped with Grant slides and a gas shock to hold the tray in both the in and out positions and shall be made from .190" aluminum with a maximum capacity of 250 pounds.

Location to be determined.

SWING-OUT VERTICAL TOOL BOARD

One (1) full height swing-out vertical tool board(s) with a150 pound capacity shall be furnished and installed in an exterior body compartment.

The tool board shall be constructed of .25" aluminum.

A single D-Ring latch shall be provided that can easily be operated with gloved hands.

To be determined.

HYDRAULIC LADDER RACK STORAGE

An electric over hydraulic ladder rack shall be installed on the right side of the apparatus body to provide ladder storage in a horizontal position above the side compartments. Power to the hydraulic cylinder shall be supplied by means of a 12 volt electric motor power pack and shall be installed in an area that provides proper protection of the electric and hydraulic components.

The ladder rack shall be of the single pivot arm design with no stabilizing arms at the front or rear to hinder access to the side compartments with the rack in the lowered position. The ladder rack assembly shall be located in the center of the body, above the rear wheel well area, with a weatherproof control switch provided on the right side pump panel in full view of the rack. The ladder rack shall be designed so that it will clear the compartment doors with the doors in the open position when the ladders are being raised or lowered.

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A hinged-down panel constructed of the same material as the apparatus body and painted to match shall be provided to cover the ladder rack hydraulic lift cylinder and pivot arm when the rack is in the stowed position.

Front and rear facing flashing lights shall be installed on the rack and shall be illuminated when the rack is in the lowered position. The outward side of the equipment rack that protrudes beyond the body of the apparatus shall be stripped or painted with reflective material.

A red warning light shall be provided in the cab to warn the driver when ladder rack is not in the stowed position. Cast aluminum ladder brackets with chrome plated quick release type mounting clamps shall be provided to hold the ladders to the pivot arm assembly.

A locking device with a control on the side panel shall be provided that shall engage and hold the ladder rack in the stored position. The locking device must be disengaged prior to the rack being lowered. The safety lock must be included in the design of the ladder rack.

One (1) 14' Alco-Lite PRL-14 aluminum roof ladder with folding roof hooks shall be provided with the apparatus.

One (1) 10' Alco-Lite FL-10 aluminum folding attic ladder shall be provided with the apparatus.

One (1) 24' two-section Alco-Lite PEL-24 aluminum extension ladder shall be provided with the apparatus.

One (1) 6' Akron IB-6-RK pike pole with I-beam fiberglass pole, standard steel hook and ram knob end shall be provided with the apparatus.

One (1) 8' Akron IB-8-RK pike pole with I-beam fiberglass pole, standard steel hook and ram knob end shall be provided with the apparatus.

One (1) 10' Akron IB-10-RK pike pole with I-beam fiberglass pole, standard steel hook and ram knob end shall be provided with the apparatus.

BODY FENDERS - POLISHED

The apparatus body fenders shall be polished stainless steel and shall be rolled, die stamped and fully removable. The stainless steel fenders and stainless fender liners shall be fastened with stainless bolts and ESNA nuts to the outer fender panel.

REAR AXLE MUD FLAPS

Two (2) black, anti-sail, mud flaps shall be mounted behind the rear wheels.

BODY RUBRAIL

The apparatus body shall have a bolt on extruded, polished stainless steel rub rail affixed to the side beneath each door area. The rub rail shall provide additional strength and protection and shall be constructed of 3/8" x 1-1/2" stainless steel fastened with stainless steel fasteners. Each rub rail shall be attached to the apparatus body with stand off spacers made from 1" diameter UHMW Polyethylene bar stock.

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REAR WORK LIGHTS

Two (2) recess mounted area work lamps shall be provided above the tailboard, one (1) each side on the inner face of the beavertail. The lights shall be shall be switched on when the parking brake is set and the apparatus is running with the master battery switch in the "ON" position.

UNDERBODY LIGHTING

Underbody ground lights shall be provided under the apparatus body as required by current NFPA 1901. Four (4) Truck-Lite model #60 ground lights shall be provided at the rear of the apparatus body, two (2) each side, to illuminate under the rear compartments.

There shall also be two (2) model #40 ground lights provided at the outer front corners of the apparatus body, one (1) each side, to illuminate the area under the forward compartments and pump panel areas. All underbody ground lights shall be switched on when the parking brake is set and the apparatus is running with the master battery switch in the "ON" position.

FOLDING STEPS

Folding steps shall be provided on the front and rear of the apparatus body. Steps shall be provided and in installed per NFPA requirements.

INTERMEDIATE REAR STEP - UPPER FULL WIDTH

An NFPA #1901 compliant rear step shall be located just above the rear compartment and span the width of the hose bed. It shall be no less than 8" in depth and fabricated of aluminum or stainless steel.

INTERMEDIATE REAR STEPS - LOWER

Two (2) rear corner steps, one (1) each side, shall be located adjacent to the rear compartment and shall be no less than 8" in depth and fabricated of aluminum or stainless steel to meet NFPA #1901 step requirements.

REAR HANDRAILS

Three (3) ribbed, solid stock 1-1/4" diameter, aluminum handrails with chrome plated stanchions shall be supplied and installed at rear of the apparatus body. There shall be two (2) 24" long vertical handrails installed, one (1) each side on the inside of the rear area of the body and one (1) 69" long handrail installed horizontally along the upper edge of the beavertail area.

HARD SUCTION TRAY - LEFT SIDE

One (1) gray powder coated aluminum hard suction tray shall be installed on the left side of the apparatus.

The tray shall be designed to accommodate from three to six inch hard suction hose in a ten foot length and employ a design without fasteners or clamps to hold the suction hose in place in the tray. The suction hose shall be able to be removed by one person from the rear of the apparatus.

The tray shall be mounted on top of the high side compartment.

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One (1) 10' long x 6" diameter TFT lightweight PVC flexible suction hose shall be provided. It shall be first quality, non-collapsible type and designed for having a low friction loss which will not collapse under a vacuum of 23". The hard suction hose shall be equipped with a long handle female end and rocker lug male end couplings.

HOSEBED FLOODLIGHT

One (1) Unity AG hosebed floodlight shall be mounted at the front right corner of the hosebed. The light shall be controlled from a water proof switch on the lamp head.

CAB SIDE SCENE LIGHTS

There shall be side scene lights installed on the side of the cab between the front and rear cab doors on the raised roof section.

The lighting position(s) shall have two (2) Federal Signal GHScene, dual lamp, 40 watt total per head scene lights with adjustable lamps and a Federal Signal chrome trim.

The scene lights shall be operated by a switch located in the driver's area of the cab.

BODY REAR SCENE LIGHTS

There shall be rear scene lights installed as high as possible on both sides of the rear of the apparatus body.

The lighting position shall have two (2) Federal Signal GHScene or equal, dual lamp, 40 watt total per head scene lights with adjustable lamps and a Federal Signal chrome trim.

The rear scene lights shall be operated by a switch located beneath the left rear step. If the scene light is left in the 'ON' position the lights shall automatically turn off when the truck is parking brake is released.

APPARATUS BODY ELECTRICAL SYSTEM

All body electrical shall conform to NFPA 1901 latest edition standards. The apparatus shall be equipped with a heavy-duty 12-volt negative ground system.

All 12-volt apparatus wiring shall pass through a heavy duty power disconnect solenoid. The 12-volt control of the power disconnect switch is to be triggered by the Master Battery Disconnect.

The apparatus shall be equipped with a Class1 Es-Key Management System for complete control of the electrical system devices.

The right rear compartment shall house a relay based Power Distribution Module (PDM). The PDM shall contain 12 standard automotive relays. Each relay's output shall be monitored by the Es-Key system to provide true on/off feedback. Each output shall be capable of handling up to 30 amps and be protected by an automatic circuit breaker. The PDM shall be mounted on a removable panel in the left rear compartment with sufficient harness length to allow a technician the ability to remove the PDM and place it on a compartment shelf for diagnostics and service.

All wiring shall be color-coded and function coded to assist the technician in servicing the electrical system. All circuits shall be divided and balanced for proper load distribution. Where possible, wiring shall be routed

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in looms as a single harness. Heat resistant convoluted loom shall be used. Only solderless, insulated crimp automotive electrical connectors shall be used.

CAB ICC MARKER LIGHTING

Five (5) amber Whelen OS Series LED cab face mounted clearance lights shall be supplied, mounted above the windshield. These lights are to be mounted in a chrome flange.

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted ahead of the front door. These lights are to be mounted in a chrome flange.

An amber diamond shaped reflector shall be mounted on the lower corner of each cab front door adjacent to the door hinge.

APPARATUS ICC MARKER LIGHTING

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted ahead of the forward body compartment. These lights are to be mounted in a chrome flange.

Five (5) red LED clearance lights shall be supplied, mounted in the rear of the apparatus.

Two (2) red LED clearance lights shall be supplied, mounted facing the side of the apparatus.

ICC lighting utilized and lighting positions shall be in conformance with FMVSS 108.

SIDE MOUNTED TURN SIGNAL LIGHTS

Two (2) Whelen, model RSA02ZCR, linear amber LED turn signal lights shall be provided mounted one each side in the front wheel well area. The lights shall be mounted in a chrome flange.

REAR STOP/TAIL/TURN/BACKUP LIGHTS

The rear of the apparatus shall be equipped with Federal Signal QuadraFlare 6"x4" lights. The top light in the assembly shall be a red LED stop/tail light, Federal Signal model QL64Z-BTT. The middle light set shall be an amber LED lamp with a populated arrow shape, Federal Signal model QL64Z-ARROW and the lower lights shall be clear LED backup lights, Federal Signal model QL64Z-BACKUP.

A one-piece polished aluminum trim casting shall be mounted around the rear stop/tail/turn and backup lights on each side of the apparatus.

BACK-UP ALARM

A solid state electronic backup alarm shall be installed on the rear of the apparatus and wired to the backup light circuit.

One (1) license plate mounting bracket and incandescent light shall be provided. The light and bracket shall be located on the rear of the apparatus.

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HEADLIGHT POSITION

The headlights shall be mounted in the upper position on the front of the cab to accommodate high profile front bumper items. The lower headlight position shall have a painted access cover to allow lighting changes in the future.

TURN SIGNALS

Two (2) rectangular Federal Signal, model QL64Z-TURN, LED turn signal lamps shall be mounted in a polished aluminum bezel outboard of the front headlights on each side. These lights shall be amber in color.

ROOF MOUNTED LIGHTBAR

A Whelen Freedom model FN72QLED, 72" light bar system shall be supplied and permanently mounted on the cab roof, as far forward as possible. This light bar system shall be supplied with eight (8) LED elements, six (6) red and two (2) clear.

This light bar fulfills the requirements for Upper Zone A and in combination with the upper rear warning devices fulfills the requirements for Upper Zones B, C, and D. Any clear warning light(s) in the light bar shall be disabled automatically for the “Blocking Right of Way” mode.

LOW LEVEL WARNING LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted on the front of the chassis above the headlights, with a chrome bezel.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left light head.

These two (2) lights fulfill the requirements for Lower Zone A lower level warning devices.

Both warning light lenses shall be red in color.

FRONT INTERSECTION LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted one (1) on each side of the front bumper/gravelshield with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Lower Zone B & D lower level warning devices.

Both warning light lenses shall be red in color.

ALTERNATING HEADLIGHT WARNING

The headlights shall be provided with an alternating headlight feature.

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When the High Beam is selected the headlights shall become a standard high beam.

Any clear warning light(s) shall be disabled automatically for the "Blocking Right of Way" mode.

A cut off switch shall be supplied to turn off the alternating headlight function.

BODY SIDE WARNING LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted one (1) on each side of the body over the rear wheel with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Lower Zone B & D lower level warning devices.

Both warning light lenses shall be red in color.

REAR UPPER LEVEL WARNING LIGHTS

Two (2) Whelen Super-LED warning lights, model B6MM LED beacons, shall be mounted on the rear of the apparatus one on each side of the hose bed on polished stainless steel stanchions.

These two (2) lights fulfill the requirements for Upper Zones B, C & D upper level warning devices.

The upper beacon portion of the light shall be red in color.

The lower directional linear Super-LED rear facing portion of the light shall have,
The driver's side lens shall be red in color and the officer's side amber in color.

REAR LOWER LEVEL WARNING LIGHTS

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted on the rear of the apparatus below the taillights at the lower outermost corners in vertical position with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Upper Zone C lower level warning devices.

Both warning light lenses shall be red in color.

LED TRAFFIC ADVISOR

One (1) amber LED Whelen traffic advisor, model TAM-85, with cable, shall be mounted on the upper rear of the apparatus. The device shall consist of eight Super-LED heads.

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The signal patterns of the device shall be progressive left, progressive right, center out, and emergency "All Flash."

The switch control box is to be mounted in the cab allowing for easy operation by the driver.

IDENTIFICATION AND SAFETY LABELS

A permanent plate shall be installed in the driver's compartment to specify the quantity and type of the following fluids in the vehicle:

1. Engine oil.
2. Engine coolant.
3. Transmission fluid.
4. Pump Transmission Lubrication Fluid.
5. Pump Primer Fluid (If applicable).
6. Drive Axle Lubrication Fluid.
7. Air-conditioning refrigerant.
8. Air-conditioning lubrication oil.
9. Power steering fluid.
10. Transfer case fluid.
11. Equipment rack fluid.
12. Air compressor system lubricant.
13. Generator system lubricant.

A permanent plate with pump performance data and serial numbers shall be installed on the pump panel.

A permanent plate shall be installed in the driver's compartment specifying the maximum number of personnel the vehicle is designed to carry per NFPA standards. It shall be located in an area visible to the driver.

An accident prevention sign stating "DANGER PERSONNEL MUST BE SEATED AND SEAT BELTS MUST BE FASTENED WHILE VEHICLE IS IN MOTION OR DEATH OR SERIOUS INJURY MAY RESULT" shall be placed so it is visible from all seating positions.

An accident prevention sign stating "DANGER DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION, DEATH OR SERIOUS INJURY MAY RESULT" shall be placed so it is visible from the rear step of the vehicle.

If an inlet located at the pump operators position is valved, it shall be provided with a permanent label with language per NFPA-1901, current edition.

WHEEL CHOCKS

One (1) pair of heavy duty, high tensile molded aluminum wheel chocks measuring 7.75" high x 8.5 wide x 15" long shall be provided with the apparatus. The wheel chocks shall have a bright yellow powder coat finish for high visibility, safety and corrosion resistance. No exception shall be allowed to these requirements.

Two chock holders shall be provided and mounted on the left side of the apparatus below the front body compartment.

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CHASSIS PAINT

The frame and running gear shall be painted gloss black enamel. The running gear shall consist of the axles, drivelines, air tanks, steering gear, frame mounted brackets, draglinks, and fuel tank.

The air system piping and electrical harnesses shall not be installed in the frame at the time of the frame painting. This shall insure complete coverage of paint behind those areas, as well as to insure that the air piping and wiring harnesses do not have paint applied to them, hindering troubleshooting.

INTERIOR FINISH

The interior of the cab shall be painted with spatter paint, textured gray in color. The spatter paint is selected for ease of repairs when the interior is scratched.

The exterior doors and all fixed cab glass is to be removed from the cab prior to the painting process beginning.

The cab metal finish shall be covered with base self-etching primer to fill the small surface imperfections.

Then the interior of the cab is to be blocked and a coat of sealer-primer is to be sprayed to the exterior finish.

Next a sealer-primer is applied and will be sanded to a smooth finish ready for final color coat application.

Two (2) coats of finished paint are to be applied to a final thickness of 4 mills.

The following interior components shall be black in color:

Sun visors
Cab interior overhead console
Interior flooring material of the cab

The following interior components shall be gray in color:

Interior headliner of the cab
Engine Enclosure console
Engine enclosure covering material in the cab
Rear wall covering of the cab

CAB EXTERIOR FINISH

The exterior doors and all fixed cab glass are to be removed from the cab prior to the paint and body process beginning.

The single color, final finish of the cab shall be to fire apparatus standards; exhibiting excellent gloss durability and color retention properties.

NOTE:

Preparation, Preclean, Pretreat, Primers and Finish Coats shall be done at the paint manufacturers recommendations and direction.

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Paints: Approved paints are PPG and DuPont other may be considered.

STAINLESS STEEL APPARATUS BODY PAINTED

The following apparatus body components shall be painted job color.

The rear wheel fender panels
The front body corner panels
The rear body corner panels
The exterior surface of the hose bed side walls/coffin compartment
The exterior surface of the hose bed/coffin compartment front wall

LETTERING

The lettering shall be done in 24 karat gold leaf and shall be to the direction of the fire chief. All lettering must be done by East Coast Artie's in Surfside Beach, SC.

REFLECTIVE SAFETY STRIPE

A 4" wide 3M brand Scotchlite reflective stripe shall be affixed to the perimeter of the vehicle. The striping shall be placed up to 60" above ground level and shall conform to NFPA reflectivity requirements. At least 60% of the perimeter length of each side and width of the rear and at least 25% of the perimeter width of the front of the vehicle shall have reflective stripe.

BODY STRIPE UP AND OVER REAR AXLE

The stripe on each side of the apparatus shall run straight back to the body, then angle up at approximately a 45 degree angle on the front body door and then run straight back from there to the rear of the body.

REFLECTIVE STRIPE COLOR

The apparatus body striping shall be BLACK reflective.

REAR BODY REFELCTIVE CHEVRON STRIPING

Red and bright yellow chevron reflective striping shall be provided and applied to the rear of the apparatus body on the rear exterior face of the left and right side compartments only (not in the center inset area of the apparatus). The stripes shall be 4" wide and shall alternate red and bright yellow. The chevron pattern shall angle up from the outer edges toward the center of the rear body.

REAR DOOR REFLECTIVE CHEVRON STRIPING

Red and bright yellow reflective chevron striping shall be provided and applied to the rear door(s). The stripes shall be 4" wide and shall alternate red and bright yellow. The chevron pattern shall angle up from the outer edges toward the center of the rear body.

RADIOS

A Motorola model M28URS9PW1 M XTL 1500 mobile radio must be furnished and installed, along with a G809 Analog, W484 3db Antenna, B-18 Speaker, G24 Two year Repair Service and Radio Programming.

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A Motorola 16 channel VHF radio furnished and installed with antenna, speaker, programming.

WARRANTIES

The following warranties shall be considered as minimum.

CHASSIS

The cab and chassis proposed, to be free from defects in material and workmanship under normal use and service for a period of one (1) year from date of delivery to Surfside Beach. This warranty shall cover the cost for parts and labor for this period of time. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

CAB

The cab proposed shall not be structurally damaged inside or out by rust and/or corrosion for a period of ten (10) years. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

CAB CORROSION

The cab shall have a ten (10) year cab corrosion perforation warranty according to the terms and conditions outlined in the warranty statement.

FRAME

The proposed frame against structural failure from bending or cracking for the entire period the chassis is owned by the original purchaser or end-user. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

ENGINE

The engine shall have the standard 5 year warranty from the engine manufacturer that is in effect at the time of the vehicle is placed into service.

TRANSMISSION

The chassis shall have a five (5) year unlimited mileage as defined in the Allison New Product Warranty.

MERITOR/ROCKWELL STANDARD AXLE

The Meritor/Rockwell axle shall have a five (5) year unlimited mileage parts and labor warranty that is in effect at the time of the vehicle is placed into service.

FIRE PUMP

The Hale fire pump shall carry the manufacturer's five year "Pro-Tech" warranty covering defective parts and workmanship. A copy of the pump manufacturer's warranty policy shall be provided with the completed apparatus.

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STAINLESS PIPING

The bidder shall warrant that all stainless steel plumbing components used in the construction of the fire apparatus water/foam plumbing systems against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of ten (10) years from the date of delivery to the original user-purchaser, whichever occurs first.

WATER TANK

The water tank is to be free from defects in material and workmanship for the normal service life of the apparatus in which the water tank is installed.

If a tank has a defect in material or workmanship covered by the warranty, the tank manufacturer shall repair at their cost, by authorized personnel or authorized third parties. The tank manufacturer shall make an effort to effectuate repair within 48 hours following initial notification of a covered defect. The tank manufacturer shall make a reasonable effort to repair tank at most convenient location to end user.

The tank manufacturer shall reimburse all reasonable costs associated with rendering the tank accessible for repair, including, but not limited to, removal and reassembly of the hose bed floor.

BODY STRUCTURAL

The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the apparatus body manufactured by the bidder (the "body"), under normal use and with normal maintenance, will remain free from structural defects for a period of twenty five (20) years from the date that the motor vehicle was first placed in service. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

BODY CORROSION

The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the apparatus body manufactured by the bidder (the "body"), under normal use and with normal maintenance, will remain free from corrosion for a period of twenty (20) years from the date that the motor vehicle was first placed in service. A body shall be considered to have "corrosion defects" if it is found by the bidder to have perforation caused by corrosion under normal use and with normal maintenance. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

CAB AND BODY PAINT

The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the painted apparatus cab, shall under normal use and with normal maintenance remain free from paint defects for a minimum period of five (5) years from the date that the motor vehicle was first placed in service. Each bidder shall submit with their proposal a copy of the warranty to be furnished.

OTHER WARRANTIES

Applicable extended warranties for certain major chassis components such as the axles, engine, transmission, apparatus body, tank, pump and related components, etc. shall be submit with their proposal a copy of the warranty to be furnished.

TOWN OF SURFSIDE BEACH
PROPOSAL FOR
THREE PUMPERS AND ONE AERIAL PLATFORM

Proposal Number PSDF #P09-0004

BID FORM
THREE (3) COPIES REQUIRED

(Failure to furnish all requested data will be cause for considering Bidder non-responsive and may render this bid invalid on that basis.) ALL BIDS SHALL BE PRESENTED ON THIS BID FORM. FAILURE TO DO SO MAY RENDER YOUR PROPOSAL INVALID ON THAT BASIS.

SUBMITTED TO: **Jan Lewis, Administrative Manager**
Town of Surfside Beach
Surfside Beach, South Carolina

SUBMITTED BY: _____
Bidder's Name

_____
Address

_____
City, State and Zip Code

1. **The undersigned, hereinafter called Vendor, in compliance with the "Notice to Bidders", accepting all of the terms and conditions of the "Instructions" including with limitation those dealing with the disposition of Bid Security; proposes and agrees, if awarded the Contract, to enter into a Contract to furnish all apparatus, materials and equipment necessary to complete this Contract within the Contract Time indicated in this Proposal, in full and reasonably intended requirements of the Contract Documents, to the full and entire satisfaction of the Owner.**

2. **THIS PROPOSAL WILL REMAIN OPEN FOR: Sixty - (60) days after the Bid Opening.**

3. **IN SUBMITTING THIS PROPOSAL, VENDOR REPRESENTS THAT:**

   (a) Vendor has become thoroughly familiar with the terms and conditions of the Proposal Documents accepting the same as sufficient to indicate and convey understanding of all the conditions and requirements under the Proposal.

   (b) This Proposal is genuine and not made in the interest of, or on behalf of, any undisclosed person, firm or corporation, and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; Vendor has not directly or indirectly induced or solicited any other Vendor to submit a false or sham Proposal; Vendor has not solicited or induced any person, firm or corporation to refrain from bidding; and Vendor has not sought by collusion to obtain for themselves any advantage over any other Vendor or over Owner.

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(c) That no member of Town Council or other officers or employees of said Owner is interested directly or indirectly in the Proposal or in any portion of the Proposal, nor in the Contract or any part of the Contract, which may be undersigned on the basis of such Proposal.

(d) The Price Proposed includes the apparatus, material, delivery fees, sales taxes and any other applicable taxes and fees.

(e) The Vendor shall purchase and maintain such insurance as will protect him and the Town of Surfside Beach from claims set forth below:

(1) Claims under Workmen's Compensation, Disability Benefit, and other similar employee benefit acts;
(2) Claims for damages because of bodily injury, occupational sickness or disease, or death of employees;
(3) Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;
(4) Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

(f) The Successful Bidder shall submit a copy of its Liability Insurance and the W-9 Form (hereto attached).

(g) The Town of Surfside Beach reserves the right to reject any and/or all Proposals based upon the best interest of the Town.

Option #1

Purchase of:

One (1) Custom Pumper	**$_____**
Two (2) Custom Pumpers	**$ _____**
Three (3) Custom Pumpers	**$ _____**
One (1) 100’ Aerial Platform	**$ _____**

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Option #2

Purchase of 2009 Demonstrator Apparatus' meeting specifications:

One (1) 2009 Custom Pumper	**$ _____**
Two (2) 2009 Custom Pumpers	**$ _____**
Three (3) 2009 Custom Pumpers	**$ _____**
One (1) 2009 100' Aerial Platform	**$ _____**

Option #3

Lease/Purchase of Apparatus':

One (1) Custom Pumper	**$ _____**
Two (2) Custom Pumpers	**$ _____**
Three (3) Custom Pumpers	**$ _____**
One (1) 100' Aerial Platform	**$ _____**

Note: It is important that all apparatus be constructed with the exact same Cab design and layout for ease in training and operation with all controls being in the exact location by driver/engineer both paid/volunteer.

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VENDOR'S AFFIDAVIT

(This Affidavit is Part of the BID)

STATE OF _____

COUNTY OF _____

Being duly sworn, deposes and says that he resides at _____

_____

that he is the_____
(Give Title)

_____

who signed the above Proposal, that he was duly authorized to sign, and that the PROPOSAL is the true offer of the VENDOR and that all the declarations and statements contained in the PROPOSAL are true to the best of their knowledge and belief.

_____
(Affiant)

Subscribed and Sworn to before me this _____ day of _____,20_____.

_____
(Notary Public)

My Commission Expires _____, 20_____.

(SEAL)

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FORM OF NONCOLLUSION AFFIDAVIT

(This Affidavit is Part of BID)

STATE OF _____

COUNTY OF _____

_____ being first duly sworn, deposes and says that he

is _____ (Sole owner, a partner, president, secretary, etc.)

of _____ the party making the foregoing Proposal that such Proposal is genuine and not collusive or sham; that said VENDOR has not colluded, conspired, connived, or agreed, directly or indirectly, with any VENDOR or person, to put in a sham PROPOSAL, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the Proposal Price of Affiant or any other VENDOR, or to fix any overhead, profit or cost element of said Proposal Price, or of that of any other VENDOR, or to secure any advantage against OWNER by any person interested in the proposed Contract; and that all statements in said Proposal are true; and further, that such VENDOR has not, directly or indirectly submitted this PROPOSAL, or the contents thereof, or divulged information or date relative thereto to any association or to any member or agent thereof.

_____
(Affiant)

Sworn to and Subscribed Before Me this _____ day of _____, 20_____.

_____
(Notary Public)

My Commission Expires _____, 20 _____.

(SEAL)

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INSTALLMENT CONTRACT FINANCING FOR FIRE APPARATUS

Surfside Beach Fire Department requests Installment Financing of fire apparatus and equipment replacement.

1. **Financing shall be used to fund the cost of three pumpers and one aerial device.**

2. **The interest rate shall remain fixed throughout the term of the financing and include any and all fees or expenses associated with the financing.**

3. **Each Proposal shall be accompanied by an Amortization Schedule listing principal, interest and total annual payments.**

4. **There shall be no Prepayment Penalty.**

5. **Among other factors, the low Proposal shall be determined by the lowest amount indicated for a total cost of financing with the requirement that the Proposal shall meet all other conditions in this Request for Proposal.**

6. **The terms of this financing are as follows:**

    a. **Annual payments in arrears**
    b. **Ten or twelve year amortization options**
    c. **Fixed interest rate**
    d. **Payment Schedule for each apparatus**

7. **Copy of required documents for financing contract shall be provided with Proposal.**

8. **The sole security for this financing shall be the apparatus financed.**

9. **Proposals will be evaluated based on total cost, ability to perform, requirements of the Lender and experience.**

10. **By submitting a Proposal, each potential lender is agreeing to abide by all provisions of the RFP. No terms or conditions of the lender may be imposed on the department that supersede or contradict this RFP.**

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PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENT: That we _____ as Principal, also referred to as VENDOR, and _____, as Surety, are held and firmly bound unto _____ as Owner, in the full sum of _____ ($_____) Dollars, for the payment of which will and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the above bound principal has entered into an Agreement with the Owner dated the _____ day of _____, 20_____, for _____ _____.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall faithfully and fully comply with the terms and conditions of said Agreement, including, but not limited to any obligations created by way of warranties and/or guarantees for workmanship and materials which warranty and/or guarantee may extend for a period of time beyond completion of said Agreement, and such alterations or additions as may be made therein or in the specifications, and shall indemnify and save the Owner harmless against all claims for damages by reason of any default or negligence, want of skill or care on the part of said principal or Agents in and about the performance of said Agreement, and shall comply with all laws pertaining to the Agreement, and shall comply with and perform any and all warranties and/or guarantees provided for in said Agreement, then this obligation shall be void; otherwise of full force and effect.

PROVIDED, further that upon either the default of the Principal, or the failure of the said Principal to promptly and efficiently prosecute said vehicles, in any respect, in accordance with the Agreement Documents, the above bound Surety shall either remedy the default of the Principal or shall take charge of said Agreement, and complete the Agreement at his own expense, pursuant to its terms, receiving, however, any balance of funds in the hands of said Owner due under said Agreement.

It shall be the duty of the Surety to give an unequivocal notice in writing to the Owner within ten- (10) days after receipt of a declaration of default of the Surety's election either to remedy the default or defaults promptly, or to perform the Agreement promptly, time being of the essence. In said notice of election, the Surety shall indicate the date on which the remedy or performance will commence, and it shall then by the duty of the Surety to give prompt notice in writing to the Owner immediately upon completion of (a) the remedy and/or correction of each default, (b) the remedy and/or correction of each item, (c) the equipment, and (d) the performance of the Agreement. The Surety shall not assert solvency of its Principal as justification for its failure to give notice of election or for its failure to promptly remedy the default or defaults or perform the Agreement.

In the event said Principal shall fail or delay the prosecution and completion of said Agreement and said Surety shall also fail to act promptly as hereinabove provided, then the Owner shall cause ten- (10) days notice of such failure to be given, both to said Principal and Surety, and at the expiration of said ten- (10) days, if said Principal or Surety do not proceed promptly to execute said Agreement, the Owner shall have the authority to cause said work to be done and when the same is completed and the cost thereof estimated, the said Principal and Surety shall and hereby agree, to pay any excess in the cost of said Agreement above the agreed price to be paid under said Agreement.

Upon completion of said the Agreement pursuant to its terms, if any funds remain due on said Agreement, the same shall be paid to said Principal or Surety.

The said Principal and Surety further agree as part of this obligation to pay all such damages of any kind to person or property that may result from a failure in any respect to perform and complete said Agreement including, but not limited to, all repair and replacement costs necessary to rectify purchase and error and fees.

The decision of the Owner, upon any disputed question connected with the execution of said Agreement, or any failure or delay in the prosecution of the work by said Principal or Surety, shall be final and conclusive.

The Surety agrees that other than as is provided in this bond, it may not demand of the Owner that the Owner shall (a) perform any thing or act, (b) give any notice, (c) furnish any clerical assistance, (d) render any service, (e) furnish any papers or documents, or (f) take any other action of any nature or description which is not required of the Owner to be done under the Agreement documents.

IN WITNESS WHEREOF, the Surety and Principal have executed this instrument under their several seals this _____ day of _____, 20___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In the Present of: **PRINCIPAL:**

_____
_____
Witness
By:_____

SURETY:

_____
_____
Witness
By:_____

NOTE: (a) **Where the Performance Bond is executed by an attorney-in-fact, there shall be attached to each copy of the Bond, a Certified copy of Power of Attorney properly executed and dated.**

(a) **An authorized agent of the bonding company, licensed to do business in South Carolina shall countersign each copy of the Bond. The title of the person countersigning the Bond shall appear after his or her signature.**

(b) **The Seal of the bonding company shall be attached to each copy of the Bond.**

(c) **The VENDOR'S signature on the Bond shall correspond with the signature in the Agreement.**

(d) The Bond shall be accompanied by a corporate resolution (which may be combined with the corporate resolution granting the signing officer authority to execute agreement) granting the corporate officer whom executes the Bond, the authority to do so.

(e) Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended), and be authorized to transact business in the State of South Carolina.